

SUSTAINABLE URBANISM THROUGH SERVICE IN LITTLETON, COLORADO

by

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A REPORT

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MASTER'S OF LANDSCAPE ARCHITECTURE

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Abstract

Once a standalone town on the periphery of Denver, Littleton is now completely surrounded by other cities on all sides. Much of northeast Littleton is experiencing many of social and demographic issues associated with an aging suburb. Buildings are showing signs of age and neglect and the area has higher incidences of crime, gang activity, drugs, and graffiti than the rest of Littleton. Because it cannot expand outward, the City of Littleton must look at ways to redevelop within its city limits.

This study focuses on achieving service in an infill development in northeast Littleton, Colorado. Research about the urban design was conducted and case studies of were documented. A program was written based on the research and a thorough inventory and analysis of existing site conditions. Based on the program, structures and site elements were located in northeast Littleton based on the principles of Sustainable Urbanism.

The design achieves service through the Sustainable Urbanist principles of defined center and edge, compactness, completeness, connectedness, and biophilia. Because the design is focused on achieving service, not strictly on the placement of buildings within an urban framework according to a design style, the result is a community that is able to support local business and mass transit through walkability, increased density, and outside connection.

Link to: [Sustainable Urbanism through Service in Littleton, Colorado](#)



sustainable urbanism through service

in littleton, colorado

a master's report by kent burnham

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ABSTRACT

Once a standalone town on the periphery of Denver, Littleton is now completely surrounded by other cities on all sides. Much of northeast Littleton is experiencing many social and demographic issues associated with an aging suburb. Buildings are showing signs of age and neglect and the area has higher incidences of crime, gang activity, drugs, and graffiti than the rest of Littleton. Because it cannot expand outward, the City of Littleton must look at ways to redevelop within its city limits.

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chapter 1:

project introduction

LOCATION AND SIZE OF SITE

The site is located in northeast Littleton, Colorado on approximately 100 acres. Figure 1.1 shows the location of the site.

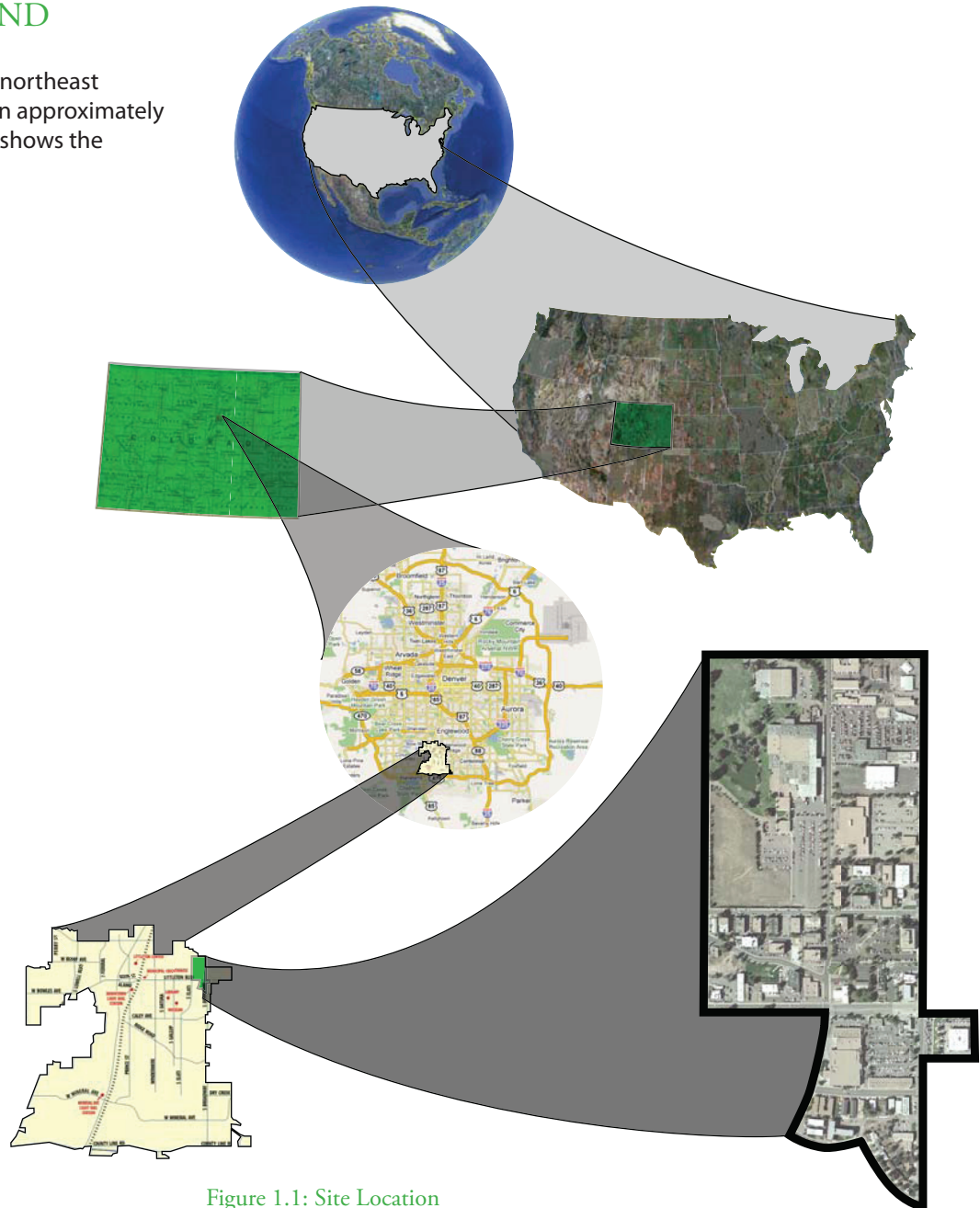


Figure 1.1: Site Location

Adapted by K. Burnham from Google Maps, Google Earth, and www.littletongov.org

DILEMMA

Northeast Littleton is at a critical juncture. This section of the city has seen increases in crime, gang activity, drugs, and graffiti in the past 20 years. Many buildings are showing signs of age and neglect. Businesses that once thrived are underperforming, leaving, or gone. Several of the properties are underutilized or vacant in the area. Traffic congestion is a problem because existing arterial roads are not large enough to accommodate automobiles from surrounding communities. With no room to expand outward, Littleton must look at ways to redevelop the northeast section of the city to attract younger residents and profitable businesses which can add to the city's tax base.

THESIS STATEMENT

Using the concept of service through Sustainable Urbanist principles, the design of a new neighborhood in northeast Littleton reconnects people to their neighborhood through a renewed sense of place and community.

CRITICAL SITE CONDITIONS AND PROGRAM POSSIBILITIES

Littleton, once a separate town on the periphery of Denver, is now surrounded on all sides by other communities. New opportunities to expand Littleton's residential and commercial base will have to come from land that has been previously developed. The site's location is in an area where the homes and businesses are in need of updating and repair because they are over 50 years old.

The site is close to two existing schools. Littleton High School is located east of South Broadway. East Elementary School is located between South Broadway and South Bannock Street. The location of these schools could be useful when redevelopment occurs as it could be a catalyst to attract younger families to the area.

The site is generally located at the intersection of Littleton Boulevard and South Broadway; two main arterial roads in Littleton. South Broadway is a major route that goes directly into downtown Denver to the north and into Highlands Ranch to the South. It is a major route for both automobiles and buses. There is also an existing bus stop at the intersection with Littleton Boulevard. Littleton Boulevard is one of two major east/west routes within the city limits and leads directly to

the historic Downtown Littleton, where there is a light rail station, a Park-N-Ride, Arapahoe Community College, and several locally owned businesses.

The intersection at South Broadway and Littleton Boulevard is the first major intersection within the city limits of Littleton from the north, and could be used as a "gateway" into the city. Also, existing zoning that allows for a mixture of uses on and near the site could be adapted to include more residential and mixed-use with the redevelopment of the Norgren site. This location has possibilities to serve as a collector site for the Regional Transportation District and a walkable community.

Northeast Littleton has seen increases in crime, gang activity, drugs, and graffiti in the past 20 years (see Figures 1.2 and 1.3). Much of Littleton's police efforts are focused on the area due to these increases. The area also has several residences which are living at, or below, the poverty level. Because of the crime and the low standard of living of many of the current residents, Littleton's Housing Authority has purchased several apartment buildings in the area and is planning redevelopment with governmental funds to help

revitalize the area. Redevelopment of the area could help to foster a renewed sense of community.

The largest portion of the site is the Norgren industrial office facility as shown in Figures 1.4 and 1.5. The business has moved many of its day-to-day operations elsewhere,



Figure 1.2: Graffiti in Littleton

Image Courtesy of www.littletongov.org



Figure 1.3: Sign in Window of Business Along South Broadway

Photograph by K. Burnham



Figure 1.4: Norgren Location
Adapted by K. Burnham from Google Earth

and is not opposed to looking at alternatives for the site. The City's Community Planning Department has also recognized Norgren as a possible site for revitalization. Currently, the approximately 35 acre site is fenced off and inaccessible. A large parking lot and open space take up approximately two-thirds of the Norgren site. Also, a pond is a focal point of the site from the surrounding neighborhoods. The open space and pond could be redeveloped into a park for residents of the site and surrounding neighborhoods.



Figure 1.5: Norgren Sign
Photograph by K. Burnham

PERSONAL PHILOSOPHY OF SUSTAINABLE URBAN DESIGN

My philosophy of the sustainable urban landscape focuses on four attributes: form and function, outside connection, economics, and aesthetics. No one attribute is more important than the other and all need to interact together to produce a place which is unique, well received, economically and environmentally sound, and highly utilized by people. As Figure 1.6 shows, the function and form, outside connection, economics, and aesthetics of a place come together to produce a sustainable community. Achieving the balance between the four attributes is essential to maintaining community sustainability.

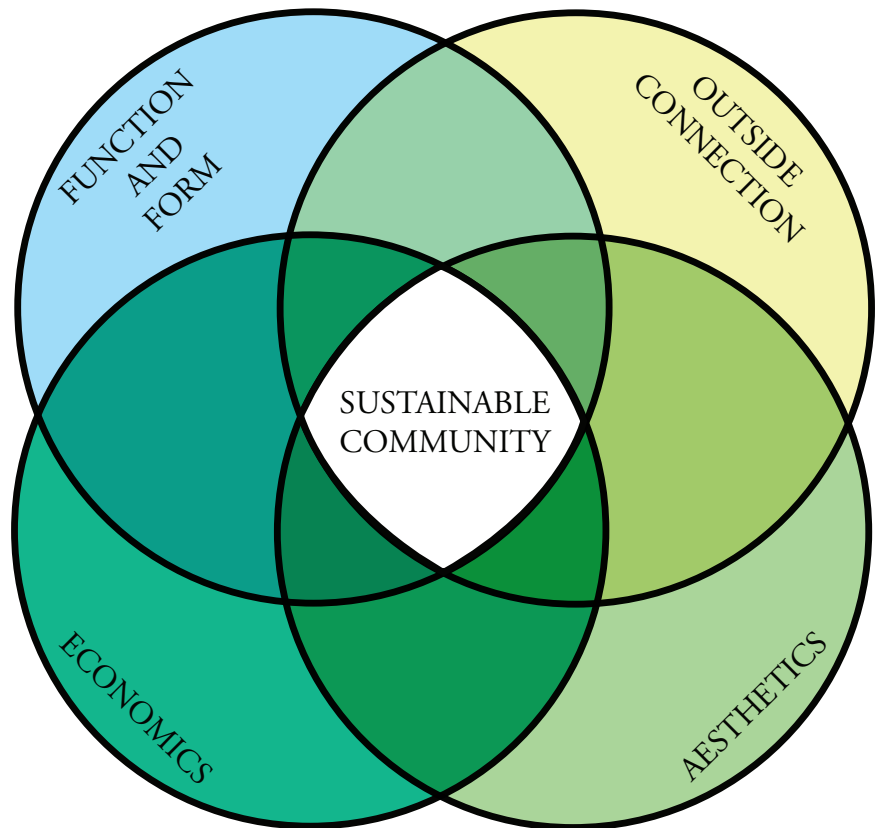


Figure 1.6: Diagram of Personal
Philosophy of Sustainable Design

Created by K. Burnham

SERVICE WITHIN A COMMUNITY

Service encourages interaction between user and site as shown in Figure 1.7.

The site services the user by:

- Meeting basic needs on a daily basis
- Giving people multiple opportunities to meet one another
- Providing easy access to surrounding areas via clear way finding and transit options
- Promoting safety and security through design
- Offering opportunities for recreation and affordable housing

The user services the site by:

- Creating new usable spaces
- Giving it a purpose which is sustainable
- Maintaining their individual pieces
- Giving ways to infiltrate stormwater via greenroofs and bioswales
- Using existing infrastructure
- Developing in a compact way that reduces the need for new greenfield development

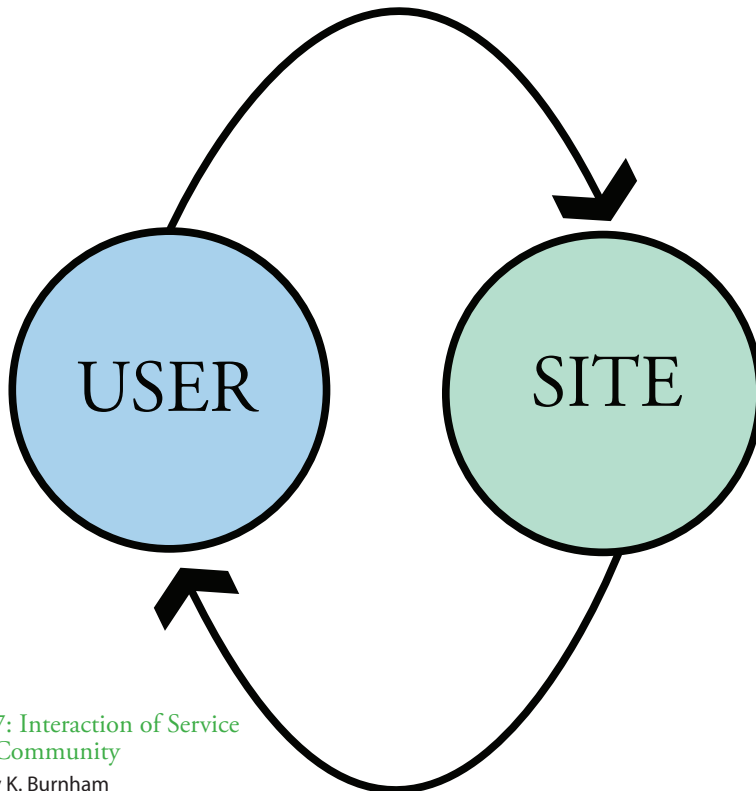


Figure 1.7: Interaction of Service within a Community

Created by K. Burnham

PERSONAL PHILOSOPHY OF THE SUSTAINABLE URBAN LANDSCAPE AND SERVICE

The four attributes of my philosophy of sustainable urban design are addressed through the ideals of service.

The form and function of a site is directly related to how service is achieved. Form provides a home for function. The better the form, the better the function. Healthy function leads the achievement of service.

- Service is directly tied to how well a site is connected to people and the larger region. Connections draw people to the site and allow alternative ways of being active within their communities.
- The economics of a site determine how well service is being achieved.
- The aesthetics of a place service the people by making the site more visually appealing.
- Service promotes interaction between the four attributes of my design philosophy, thus creating a sustainable community.

DESIGN PROCESS

Figure 1.8 illustrates the process of this master's project. There are four phases. The phases overlap throughout the project and draw upon each other.

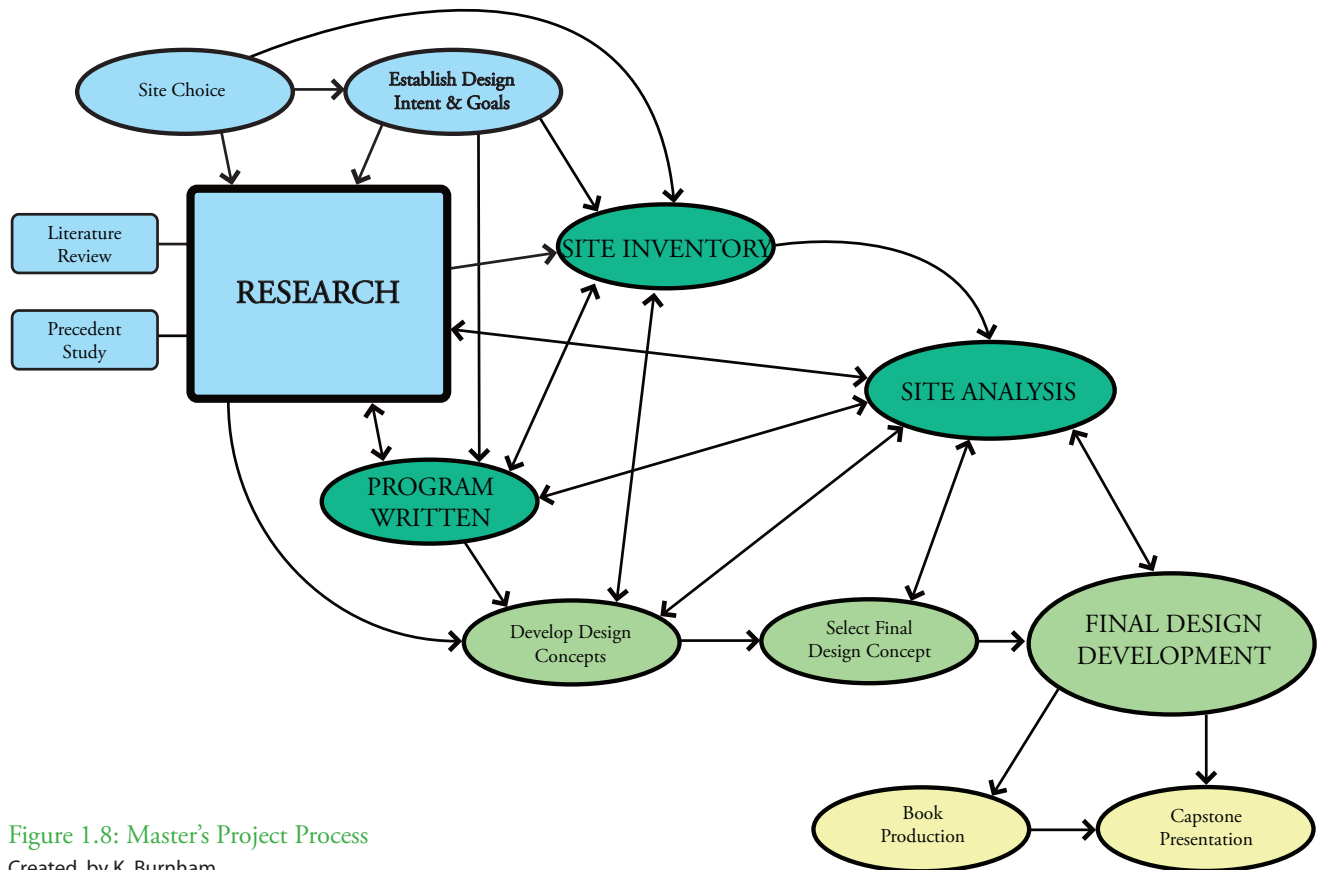


Figure 1.8: Master's Project Process
Created by K. Burnham

DESIGN PROCESS
TIMELINE

Figure 1.9 shows the approximate timeline for the completion of this master’s project.

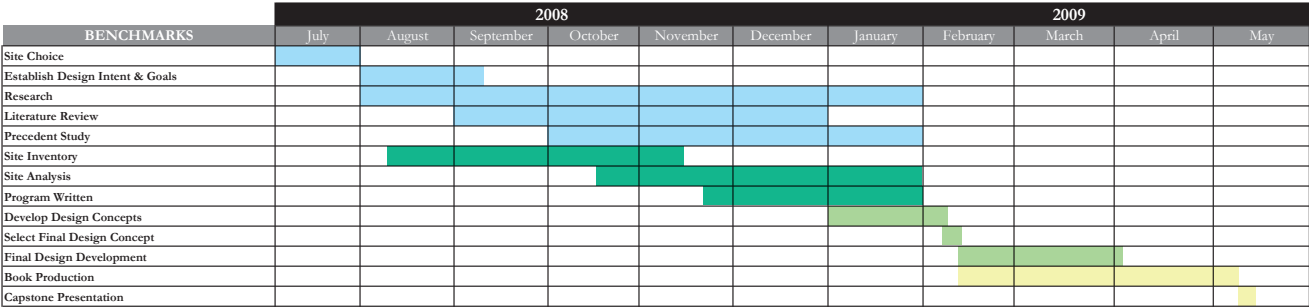


Figure 1.8: Master’s Project Timeline
Created by K. Burnham



chapter 2:

research

RATIONALE FOR RESEARCH:

To achieve service within an urban area, one must look at ways in which communities can be designed to do so. Research is divided into two parts: literature review and precedents. The literature review examines the current design movements and techniques used in urban design which bring people and place together. Precedents are used to look at built work which has been recognized as having been significant in achieving success between people and place. The research combined with a thorough site inventory is used to develop the rationale for the analysis of the site in northeast Littleton, as shown in Figure 2.1.1.

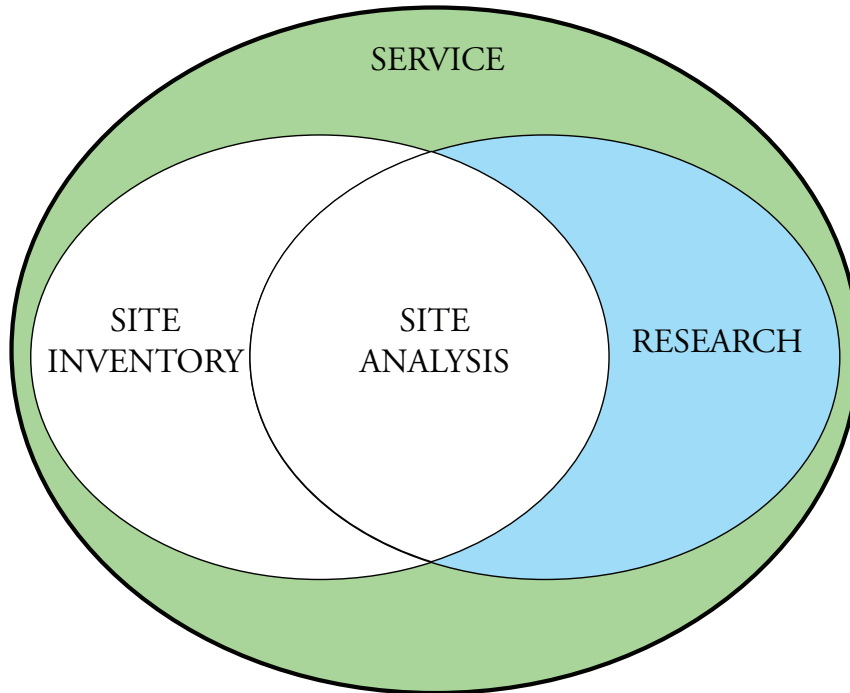


Figure 2.1.1: Process Diagram of Research

Created by K. Burnham



chapter 2.1:

literature review

SUSTAINABLE URBANISM (Farr 2008)

Sustainable Urbanism brings together the movements of Smart Growth, New Urbanism, and Green Building. It is a holistic approach to the built environment which is intended to provide a framework that integrates all human and natural systems to create urban neighborhoods and corridors which are sustainable. It takes into account location, urban design, and building design. Sustainable Urbanism is essentially “walkable transit-served urbanism integrated with high-performance buildings and high performance infrastructure” that meet LEED (Leadership in Energy and Environmental Design) certification standards (Farr 2008, 42).

The design movement borrows the framework of urbanism described in the Congress for the New Urbanism. The framework is comprised of three basic elements:

- **Neighborhoods:** Neighborhoods are compact, pedestrian oriented, and mixed-use. (See Figure 2.1.12 Sustainable Neighborhood Unit Diagram)
- **Districts:** Districts are compact and pedestrian friendly, but typically have a single use.
- **Corridors:** Corridors, both man made and natural, connect neighborhoods and districts (See Figure 2.1.3: Sustainable Corridor Diagram)

The most notable characteristic of Sustainable Urbanism is the sustainable neighborhood. The neighborhood is built on the tradition of Main Street and neighborhood by the ideas of New Urbanism. There are five principles that Sustainable Neighborhoods are built upon:

- **Defined Center and Edge:** Neighborhoods must be clearly identifiable and promote walkability and responsibility of neighborhood residents.
- **Compactness:** Sustainable Urbanism requires a minimum density of seven to eight dwelling

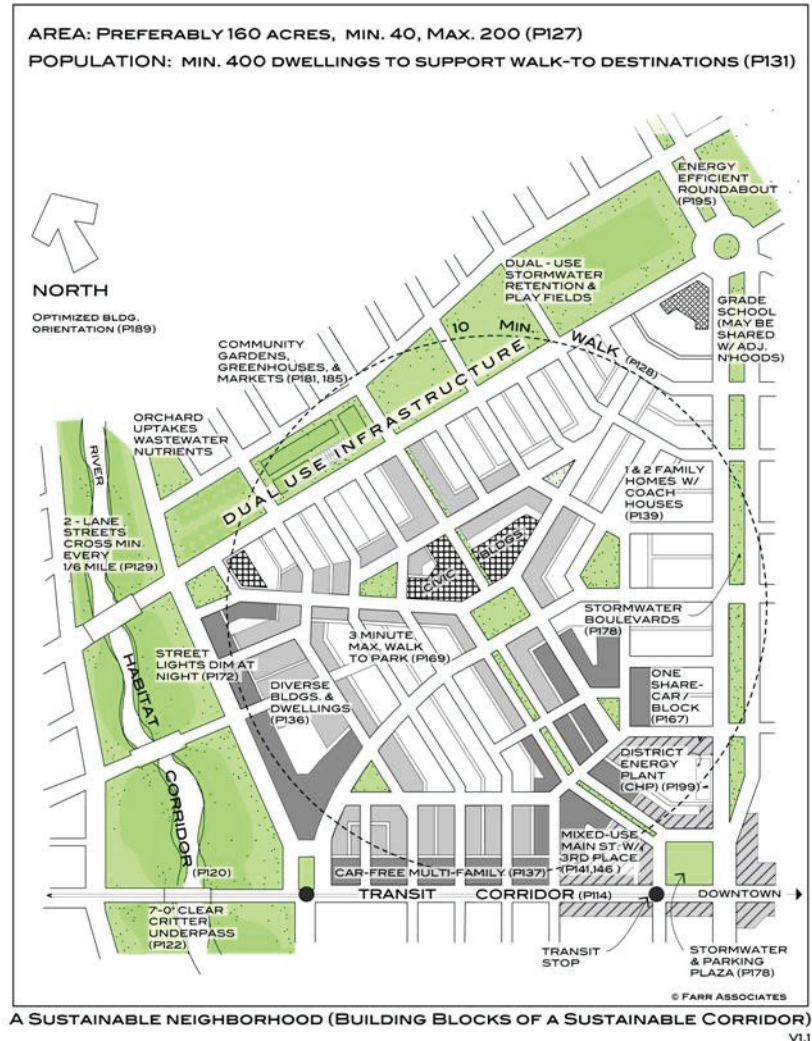


Figure 2.1.2: Sustainable Neighborhood Unit Diagram
Farr 2008, 126

units per acre. The increased population within a reasonable walking distance decreases length of walking trips, reduces auto use, and provides the market for goods and services within the neighborhood. It supports improved public transit. Compactness is accomplished through a diverse offering of housing types and price ranges within the same neighborhood.

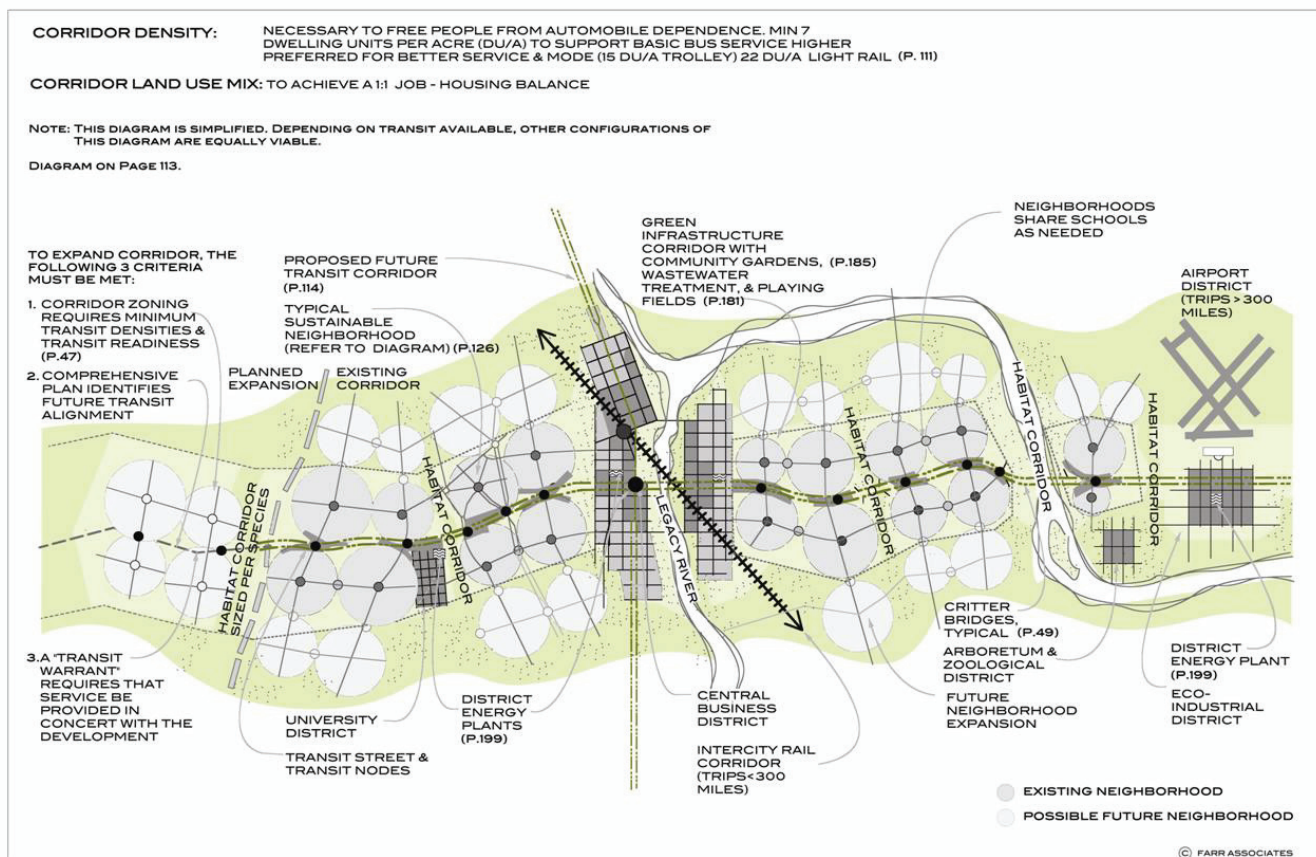
- **Completeness:** Neighborhoods exist to meet daily and lifetime

needs of the people. They should include a wide variety of land uses building and dwelling types. Sustainable Urbanist neighborhoods are places where people are able to live a high-quality life without needing to own a car.

- **Connectedness:** By integrating land use and transportation needs, connectedness provides abundant opportunities to walk, ride, and bike around the neighborhood. The street network is designed

for pedestrian safety. Streets are lined with sidewalks on both sides. Distances between intersections are 300 to 400 feet maximum. Neighborhoods are well served by transit. Transit corridors link neighborhoods together with districts and other regional destinations.

- **Biophilia:** Biophilia connects people to nature and natural systems. It increases human awareness to natural systems and reduces impact of development on



A SUSTAINABLE CORRIDOR (BUILDING BLOCKS OF A SUSTAINABLE REGION)

VI.1

Figure 2.1.3: Sustainable Corridor Diagram

Farr 2008, 113

natural systems and surrounding communities. Biophilia also provides habitat for wildlife.

Other principles of Sustainable Urbanism that merit attention are high performance infrastructure and high performance buildings. High performance infrastructure addresses Smart Growth concerns and the financial burden imposed that comes with new greenfield development. A compact pattern of infrastructure conserves physical materials needed to construct, maintain, and finance new developments. Practices enhance the buildings environmental performance through design and construction. High performance buildings consume less energy during the construction phase and they consume less energy through everyday use.

SMARTCODE (SmartCode Central 2009)

The SmartCode is an integrated land development ordinance. It ties zoning, subdivision regulation, urban design, public works standards, and basic architectural controls into a compact document. The SmartCode is a unified ordinance addressing multiple scales ranging from the community block to the region.

The SmartCode also enables the implementation of a community's vision through coding specific outcomes desired in particular places. It allows for different

approaches in different areas of the community by not being a one-size-fits-all conventional code. The SmartCode is meant to be locally customized by planners, architects, attorneys, and community members to fit the local character and vision of a community.

The SmartCode supports:

- Walkable and mixed-use neighborhoods
- Transportation options
- Conservation of open lands
- Local character
- Housing diversity
- Vibrant downtowns

The SmartCode Discourages

- Sprawl development
- Automobile dependency
- Loss of open lands
- Monotonous subdivisions
- Deserted downtowns
- Unsafe streets and parks

The SmartCode is organized around the rural-to-urban transect as seen in Figure 2.1.4. The transect illustrates the most rural to the most urban environments. It allows environmental and urban concerns to be administered in an integrated way. The transect is a tool that can coordinate standards across disciplines and scales while allowing the integration of design protocols of traffic engineering, public works, town planning, landscape architecture, and ecology. Patterns of development at the regional, community, and building and block scales are addressed.

FORM-BASED CODES (Form-Based Codes Institute 2008 and Parolek 2008)

Form-based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. This is in contrast to conventional zoning's focus on the segregation of land uses through the control of development intensity through abstract and uncoordinated parameters such as floor area ratio (FAR), dwellings per acre, setbacks, and parking ratios.

Form-based codes are regulatory, not advisory. They are drafted to achieve community vision based on time-tested forms of urbanism. A form-based code is a tool which guides development. Outcomes are dependent on the quality and objectives of the community plan.

Form-based codes commonly include:

- A Regulating Plan: A plan or map of the regulated area designating the location of the elements where the standards apply. It is based on clear community intentions regarding physical form.

- **Public Space Standards:** Specifications for the elements within the public realm. They specify types of streetscapes and open spaces which are allowed.
- **Building Form Standards:** Regulations that control the configuration, features, and functions of buildings that define and shape the public realm.
- **Administration:** A clearly defined application and project review process
- **Definitions:** A glossary to ensure the precise use of technical terms

NEW URBANISM (Congress for the New Urbanism)

New Urbanism is a design movement. It came about as a response to urban sprawl. The Charter of the New Urbanism consists of twenty-seven principles which are intended to guide public policy, development practice, urban planning, and design.

These principles are divided into three categories or scales. Each category has nine subcategories that outline the specific principles relevant to that particular scale. Many of the principles overlap on multiple levels. The three scales that New Urbanism addresses are:

- The region: metropolis, city, and town
- The neighborhood, the district, and the corridor

- The block, the street, and the building

The Charter for the Congress for the New Urbanism states that it "...views disinvestment in central cities, the spread of placeless sprawl, increasing separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society's built heritage as one interrelated community building challenge." New Urbanism's goal is to reclaim and reshape communities into distinct, diverse, and deliberate places which support human and environmental needs.



Figure 2.1.4: SmartCode Rural to Urban Transect
Courtesy of SmartCode Central

INFILL DEVELOPMENT

Infill development is becoming a more popular alternative to the low density suburban development in many cities. “Infill development is defined as new construction on vacant, unused, or underutilized land parcels located in built up areas,” (Real Estate Research Corporation 1982, 2). Infill development, however, cannot be easily defined because it is utilized for many purposes and is applied to a variety of urban environments (Smart 1985). Infill sites can be a small parcel to few acres to hundreds of acres. They are generally located in areas where the surrounding development is at least 15 to 20 years old and the bulk

of the property has been vacant or grossly underused for at least five years (Smart 1985).

Infill sites differ in many ways. Their size, configuration, price, history, context, condition, and entitlement issues are always unique with no two locations being exactly alike (Schmitz 2003). The range of products can be anywhere from lofts, to townhouses or rowhouses, to single family homes on small lots. Many projects offer a mixture of products and uses in a single development. “Often, infill housing developments combine various (housing) products, structure, and tenure (residence) types to yield

a creative new urban product,” (Suchman 2002, 4). They can be strictly residential, mixed-use, or multiuse developments.

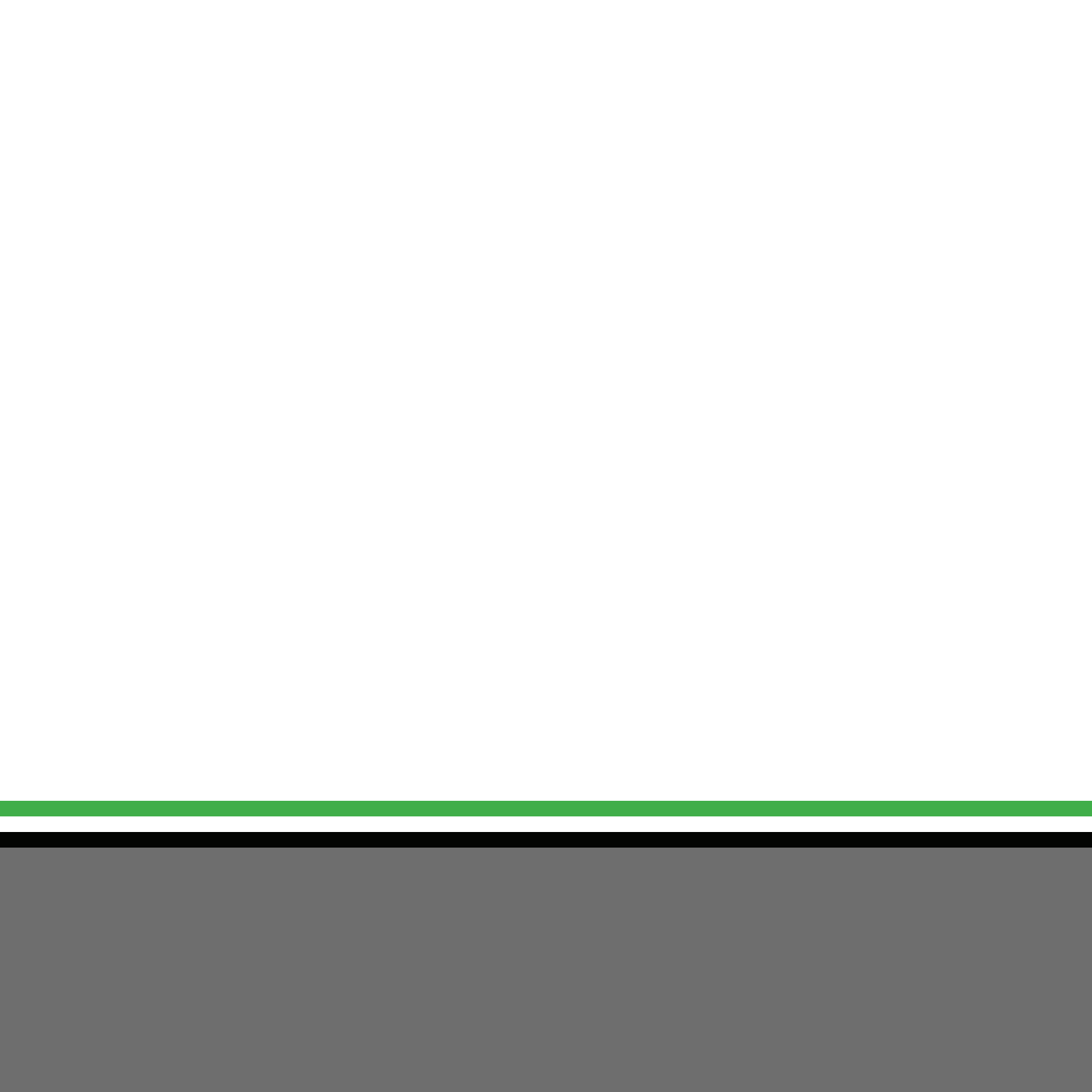
As stated, no two infill sites are exactly alike, but there are common characteristics that help to determine if an infill site will be successful. Table 2.1.1 illustrates the factors affecting infill development potential for several factors. Table 2.1.2 shows the optimum characteristics that, when present, create potential for successful infill developments.

Factors	Markets with Highest Potential	Markets with Lowest Potential
Growth	Rapidly growing population; extensive demand for new housing	No population growth; limited new household formations
Employment Centers	Strong Central Business District (CBD) and local employment nodes; long commuting distances from the urban fringe	Weak Central Business District (CBD); dispersed employment centers; short commutes from the fringe to jobs
Building Conditions	Extensive investment (public and private) in neighborhood preservation and upgrading	Little investment in existing building stock or public facilities
Resident Incomes	Infill land located in a variety of neighborhoods serving many income groups	Infill land concentrated in low-income neighborhoods
Land Prices	Shallow land price gradient from urban fringe to inner city or significant density differences to balance steep gradient	Steep land price gradient from urban fringe to inner city and little variation in land use densities
Growth Controls	Limits on outward spread of development operating regionwide	No growth guidance or coordination among jurisdictions
Availability and Cost of Services	Developers at the fringe pay costs of service extensions and assist with school and park requirements; limited preservicing	Extensive preservicing; little in the way of impact fees charged

Table 2.1.1: Factors Affecting Infill Development
Adapted from Real Estate Research Corporation by K. Burnham

The Context	The Property
Viable market area	For sale at a realistic price
Compatible , well maintained surrounding properties	Sufficient size for intended use
Receptive neighborhood	Perceived market for intended use(s)
Helpful city government	Adequate utilities in place
Absence of environmental problems	Street frontage
Workable building code	Regularly shaped developable parcels
Good public services	No major topographic, drainage, or subsoil problems
	Appropriate zoning
	Potential development profitability comparable to alternative sites

Table 2.1.2: The Optimum Infill Site
Adapted from Real Estate Research
Corporation by K. Burnham



chapter 2.2: precedents

SUSTAINABLE URBANISM: GLENWOOD PARK ATLANTA, GA



Figure 2.2.1: Glenwood Park Logo
Courtesy www.glenwoodpark.com

Location: Atlanta, Georgia

Size: 28 acres

Designers:

- Master Plan: Dover, Kohl, & Partners
- Developer: Green Street Partners

Physical Context:

Glenwood Park is a 28-acre neighborhood in Atlanta, Georgia, two miles from the center of downtown as seen in Figure 2.2.2. It is located on a former industrial site that had most recently been used as a concrete recycling facility. A small amount of industrial land remains nearby, but the community is primarily surrounded by century-old, single-family neighborhoods, including Grant Park to the west and Ormewood Park and East Atlanta to the east. The northern boundary is Interstate 20. To the south is a collector-level street, Glenwood Avenue. To the east is a single-family neighborhood called North Ormewood Park (See Figure 2.2.3).

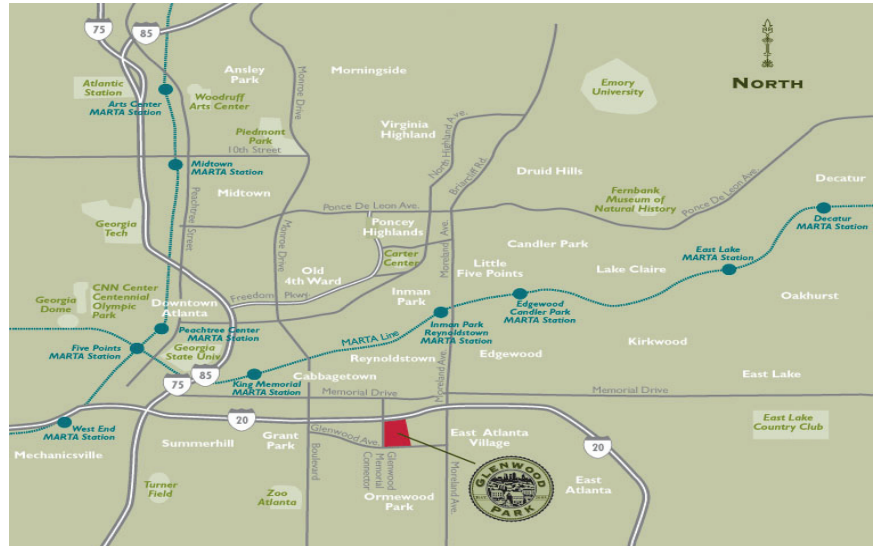


Figure 2.2.2: Glenwood Park Location
Courtesy www.glenwoodpark.com

Theoretical Context

Glenwood Park seeks to offer a compelling alternative for those who are dissatisfied with the choices provided by conventional development. Conventional development emphasizes the private realm, auto dependency, single use pods, privacy, exclusivity, and bigger and bigger private

houses. Glenwood Park, as shown in Figure 2.2.4, emphasizes the public realm, walkability, mixed uses, community, diversity, and quality over quantity.

Significance of the Project

The design of Glenwood Park has transformed a former industrial site into a neighborhood that utilizes Sustainable Urbanism principles.

- The neighborhood is much denser than most of Atlanta, and it integrates transportation, land use, and technology.
- Glenwood Park incorporates locally owned stores to benefit the local economy.
- Open space is also an integral design element.
- The project uses sustainable infrastructure to manage its stormwater and reduce its impact to surrounding areas.



Figure 2.2.3: Glenwood Park Site Photo
Courtesy www.glenwoodpark.com

Glenwood Park has received several awards. They are:

- 2005 Charter Award, Congress for New Urbanism
- 2005 EarthCraft House Development of the Year
- 2004 Community of the Year, Greater Atlanta Home Builders Association
- Outstanding Community, Georgia Urban Forest Council
- 2004 Best Atlanta Real Estate Developer (Charles Brewer),

- Creative Loafing's Best of Atlanta
- 2004 Distinguished Conservationist Award (Charles Brewer), Georgia Conservancy

Significance to the Site in Littleton

Glenwood Park shows how Sustainable Urbanist principles can

Figure 2.2.4: Glenwood Park Site Plan
Image Courtesy of www.glenwoodpark.com



be used to create an area that is economically feasible. The area is projected to increase the tax base of the area by as much as \$4.5 million with local shops and restaurants.

The project also offers diverse transit options. It incorporates Atlanta's bus transit system (MARTA) to reduce the amount of driving required among its residents.

The site contains a school, eliminating the need for children to be bused.

The site also incorporates a system of bicycle and walking trails.

Glenwood Park incorporates a stormwater management system which reduces runoff by as much as two-thirds. Stormwater is directed toward landscaping on individual lots and the central park. Rainwater is detained so that it can soak back into the ground rather than be directed through a storm drain.

NEW URBANISM: BELMAR LAKEWOOD, CO



Figure 2.2.5: Belmar Logo
Image Courtesy of www.belmarcolorado.com

Location: Lakewood, CO

Size: 106 acres (approximately 22 city blocks)

Designers:

- Developer: Continuum Partners, LLC
- Planners: Elkus-Manfredi Architects, Ltd
- Landscape Architects: Civitas, Inc
- Residential Architects: Van Meter, Williams, Pollock

Physical Context

Belmar is a 22 block redevelopment project located in Lakewood, Colorado about 15 minutes from downtown Denver. The site occupies one-quarter of a civic master

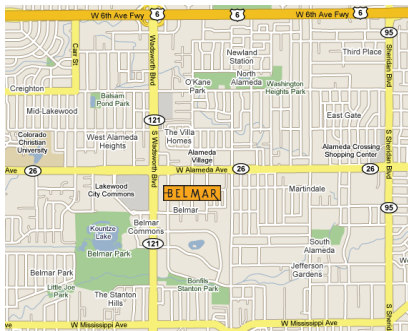


Figure 2.2.6: Belmar Location
Adapted from Google Maps by K. Burnham

plan area that includes City Hall, Lakewood Commons, and Belmar Park. Belmar is one mile from US Route 6 and four miles from I-25 (See Figure 2.2.6)

Theoretical and Historical Context Behind the Design

The current site for Belmar used to be the 1.4 million square foot Villa Italia Mall. When opened in 1966, the mall was the largest indoor mall between Chicago and the West



Figure 2.2.7: Villa Italia Grand Opening
Image Courtesy of www.belmarcolorado.com



Figure 2.2.8: Villa Italia Grand Opening Activities
Image Courtesy of www.belmarcolorado.com

Coast. (See Figures 2.2.7 and 2.2.8). For 35 years, it was considered the commercial and social center of Lakewood. As with many malls built in the 1960s, Villa Italia began declining in the 1990s, losing sales



Figure 2.2.9: Villa Italia Only 30 Percent Occupied in the Mid 1990s
Image Courtesy of www.belmarcolorado.com

because of the changes in the marketplace, shifting demographics, new competition, the loss of its anchor stores, and refinements within the retailing industry. As seen in Figure 2.2.9, at its low point, the mall was only 30 percent occupied.

City of Lakewood officials decided to intervene by exploring redevelopment options for Villa Italia. Over the course of a year in 2000-2001, the city initiated an extensive public process, establishing a citizen's advisory committee and inviting members of the community to comment on potential redevelopment options. Initially, committee members favored only one-story retail establishments. The mindset changed after the city distributed disposable cameras and asked members to take pictures of places

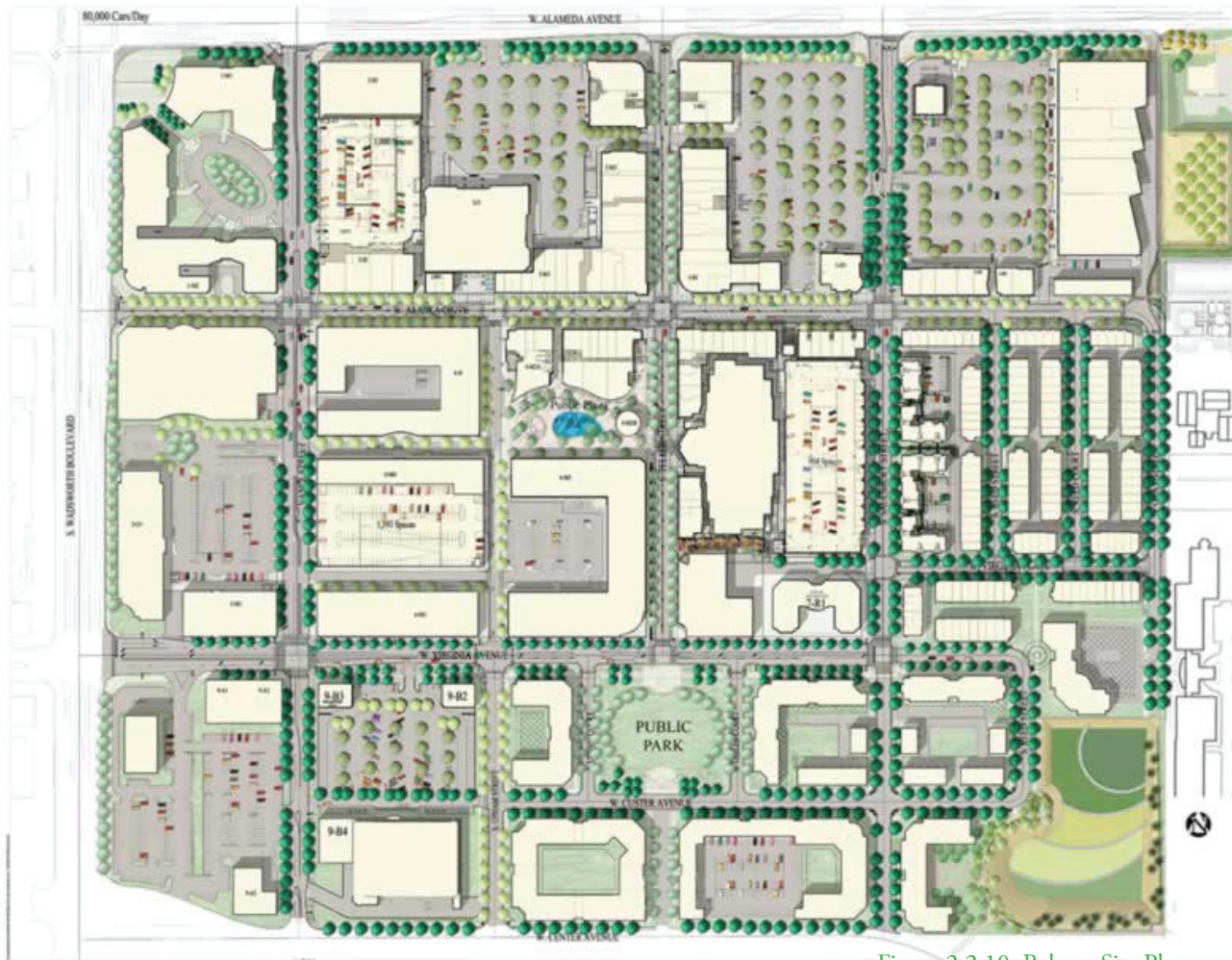


Figure 2.2.10: Belmar Site Plan
Image Courtesy of www.belmarcolorado.com

where they would want to shop and congregate. They came back with photos of downtown Boulder and Denver's Lower Downtown (LoDo). A decision was made that the new development would be:

- Three to four story mixed-use
- Pedestrian friendly

- Create a distinctive sense-of-place
- Figure 2.2.10 is an illustration the final design for Belmar.

Significance of the Project

The City of Lakewood saw opportunity in Villa Italia's decline and transformed their city. Belmar

is a prime example of how public-private partnerships can work together to produce a high quality environment that reflects a clear community vision. The partnership turned an underutilized greyfield site into a vibrant destination that improved the area's aesthetic,

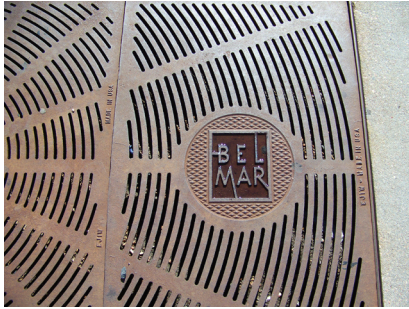


Figure 2.2.11: Belmar Tree Grate
Photo by K. Burnham

increased tax revenue, and provided residents of Lakewood a sense of place. Belmar is now a unique area within the Denver Metro Area that attracts people from across the region. Figures 2.2.11 to 2.2.14 illustrate the uniqueness of Belmar and the clear community vision achieved by the development.

Belmar has been recognized locally, nationally, and internationally for its design. The awards Belmar has received are:

- 2005 Congress of New Urbanism Charter Award
- Silver LEED Certification for Green Building
- EPA Phoenix Award 2004
- Denver Regional Council of Governments Achievement



Figure 2.2.12: Belmar Mixed-Use
Photo by K. Burnham

(DRCOG) 2005

- 2005 International Economic Development Council's "Public/Private Partnership Award"
- Urban Land Institute's Award of Excellence 2006

Significance of the Project to the Site in Littleton

Belmar is located at the intersection of Alameda and Wadsworth, two well traveled main arterial roads. The site in Littleton is located at the intersection of South Broadway and Littleton Boulevard - also two



Figure 2.2.13: Belmar Lily Pad Lane
Photo by K. Burnham

arterials which are well traveled. The possibility for connection from the Littleton site to Denver is similar to the connection of Belmar to Denver.

The site in Littleton and Belmar are located in areas that have major bus routes and have, or will have light rail service within a few miles. The intersection at Broadway and Littleton Boulevard is the stop of a major bus route for the South Metro Area. Unlike Belmar, the City of Littleton already has a light rail station within a couple of miles in Downtown. There is immediate

potential for connecting the site to the Littleton Station and the amenities of Downtown Littleton.

Belmar is a destination. Broadway is a major arterial, with thousands of automobiles traveling it every day. There is an opportunity to redevelop the area and advertise what Littleton has to offer.

Like Lakewood, much of Littleton's annual revenue is generated through its tax base. Belmar has much improved Lakewood's tax base, turning a liability (Villa Italia) into a public asset. Belmar helps fund programs and infrastructure initiatives that benefit the entire community. By reinvesting in the community, as Lakewood did with Belmar, Littleton could potentially increase its tax revenue substantially.



Figure 2.2.14: Belmar Street Light
Photo by K. Burnham



chapter 3: inventory and analysis

SITE INVENTORY AND ANALYSIS

Site inventory and analysis is used to determine if a site can support proposed development. A thorough inventory of the site is conducted to determine the existing conditions and issues associated with Littleton. The site inventory is conducted using the five principles of Sustainable Urbanism as a guide. The site analysis is a synthesis of the research and the inventory within the context of service as illustrated in Figure 3.1. The inventory and research drive the analysis and will ultimately determine which elements will be included in the programming and design of the site.

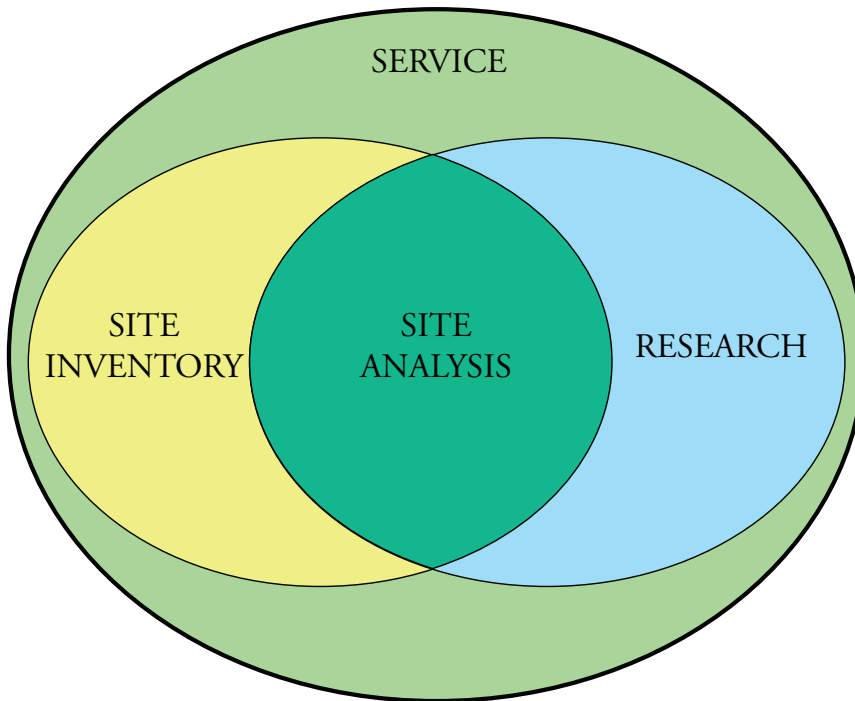


Figure 3.1: Process Diagram

Created by K. Burnham



chapter 3.1:

site inventory

SITE INVENTORY PROCESS

The inventory is conducted by looking at the site from the regional, local, and the site specific scale. Sources for the inventory include: regional and local resources, studies, and plans as well as personal observation. Existing conditions studied include the location, site access, slopes, soils, watershed, climate, zoning, character, and economics. These conditions, when analyzed in the context of service, provide a better sense of what the site can support from a developmental perspective.

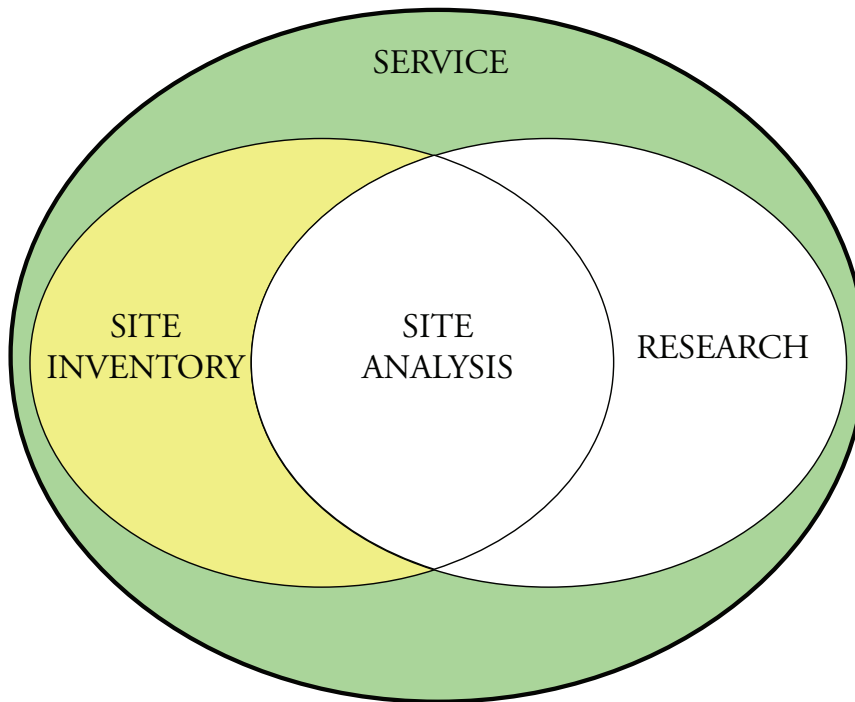


Figure 3.1.1: Site Inventory Process Diagram

Created by K. Burnham

SITE DESCRIPTION AND LOCATION

Littleton is located in western Arapahoe County and is a suburb of Denver, Colorado. The city's area encompasses 13.9 square miles of South Metro Denver and is completely surrounded by the cities of Englewood and Centennial, Highlands Ranch, Unincorporated Jefferson County, and the Town of Columbine Valley as shown in Figure 3.1.2. Because it is completely surrounded, the city has no room to expand outward, making it a first-tier suburb. According to the 2000 U.S. Census Littleton is Colorado's 17th largest community with a population of 40,340 people.

The site is situated on approximately 100 acres of land in northeast Littleton and is approximately two miles east of Historic Downtown Littleton. A large portion of the site is currently home to Norgren, an international manufacturer of pneumatics. Norgren sits on approximately 35 acres of land which is fenced off and inaccessible to the public. Norgren has notified the City of Littleton that they will be vacating the site and moving their operations elsewhere. The rest of the site is a mixture of businesses and multi-family residential buildings which were built in the

1950s and 1960s. Many of the apartment buildings just south of Norgren along West Powers are in poor condition. The Littleton Housing Authority has purchased several of these buildings for redevelopment with LIHTC (Low Income Housing Tax Credit) funds.

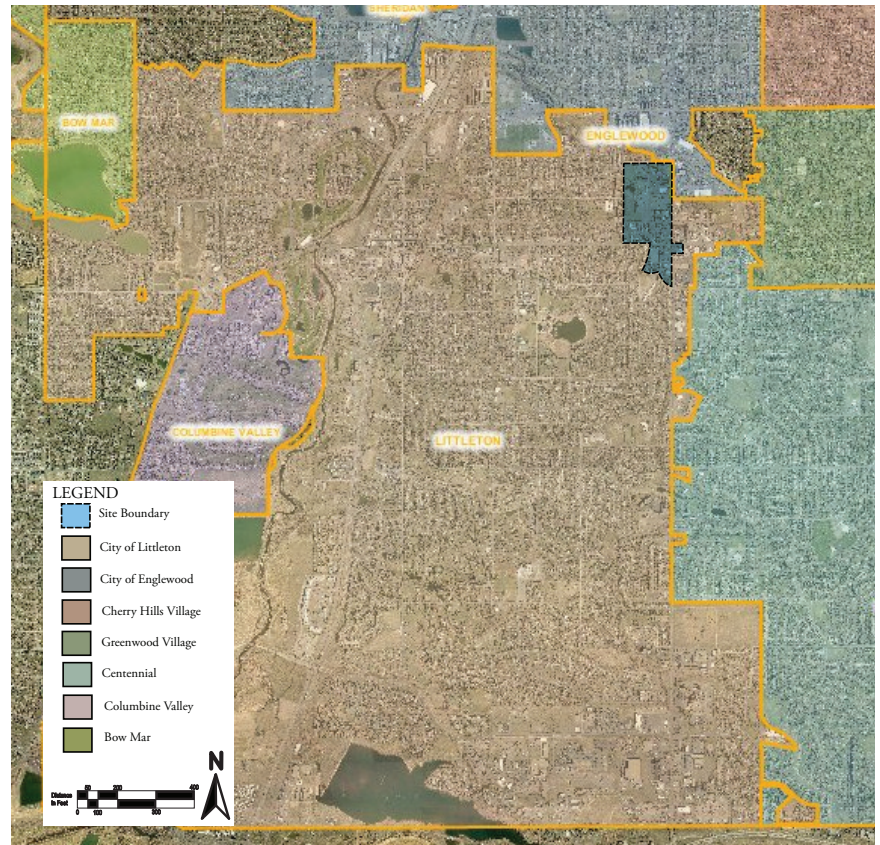
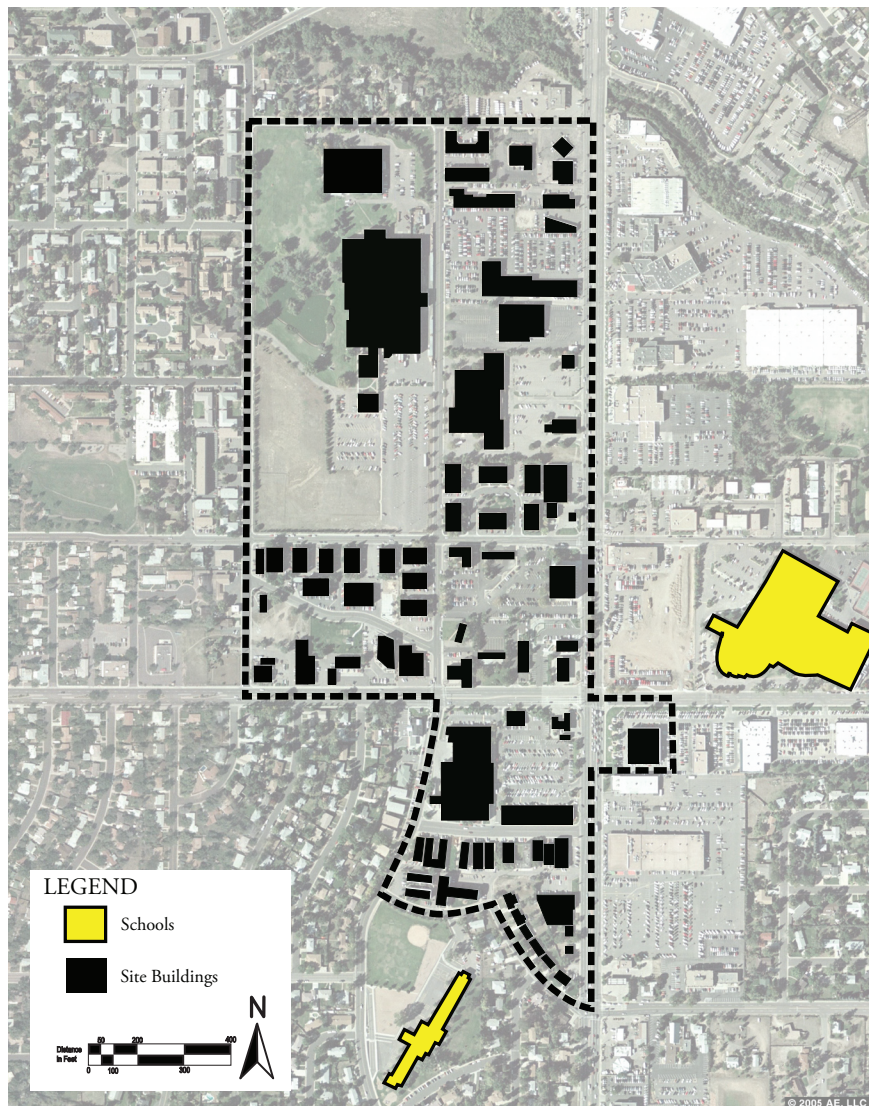


Figure 3.1.2: Littleton and Surrounding Communities

Adapted by K. Burnham from <http://gis.co.arapahoe.co.us>



The site is located near two existing public schools as shown in Figure 3.1.3. Littleton High School is located east of South Broadway on East Littleton Boulevard. East Elementary School is located between South Broadway and South Bannock Street on South Fairfield Street. These schools are part of the Littleton Public School system which consistently ranks above average on results of both state and national standardized tests.

Figure 3.1.3: Existing Schools
Adapted by K. Burnham from Google Earth

AUTOMOBILE ACCESS TO THE SITE

The site is located at the intersection of Littleton Boulevard and South Broadway. These roads are classified as arterial roads, and have accordingly high volumes of traffic. The City of Littleton performs traffic counts regularly for all major roads in the city. Traffic is measured for both directions over a 24-hour period and recorded. Volume for South Broadway adjacent to the site was 39,207 in 2007. The recorded volume for Littleton Boulevard was 26,428 during 2007. Volumes for both roads are the second and third highest for the city respectively behind volumes for Santa Fe Drive.

Businesses along South Broadway and Littleton Boulevard are easily accessible via automobile. Parking lots affront these roads and appears to be enough existing parking for these businesses. Figure 3.1.4 illustrates the number of access points to businesses along Littleton Boulevard and South Broadway.

Collector roads off of Littleton Boulevard and South Broadway service the rest of the site. There is access to Norgren off of Bannock, Delaware, and Rafferty Gardens. However, there is no public access to Norgren and a tall chain link fence keeps people from trespassing.

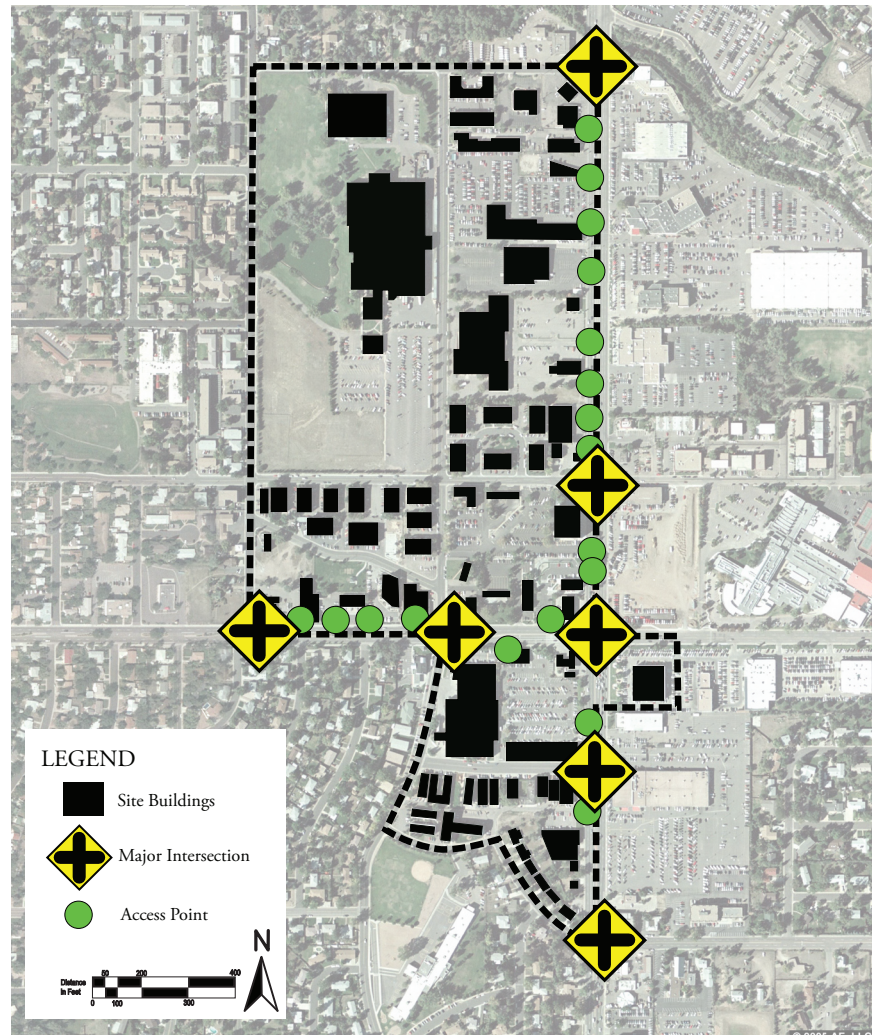


Figure 3.1.4: Existing Access Points along Littleton Boulevard and South Broadway

Adapted by K. Burnham from Google Earth

MASS TRANSIT ACCESS TO THE SITE

Denver as a whole has very good access to mass transportation. The Regional Transit District (RTD) has made a concerted effort to connect the city to quality public transport. Just passed is FasTracks, a bond issue that supports RTD's 12-year comprehensive plan to build and operate high-speed rail lines and expand and improve bus service throughout the region.

Light rail access to the city has been in place since 1997 and Littleton was one of the first suburbs to be connected to the Denver Metro Area via rail. Since its opening, the Southeast Corridor has been heavily used by commuters in the region. There are currently two stations along the Southeast Corridor within the city limits; the Littleton Station and the Mineral Station which are seen in Figure 3.1.5. Park-N-Rides at both the stations are almost always full during the week from early morning until evening. Buses are heavily used during peak hours to shuttle people both to and from these stations.

The site is accessible by bus. RTD has regular bus service to the area as illustrated in Figure 3.1.6. The South Broadway (0) route, which runs up and down Broadway, makes stops every 7.5 minutes during peak and midday hours during the week as well as Saturdays and every 15 minutes during evening hours and Sundays. The terminal stops for

this bus are at the old Southglenn Mall in Centennial (which is being redeveloped as a town center for the city) and Union Station in Downtown Denver. This bus makes multiple stops along Broadway. Some of the important stops on the 0 route are in Downtown Englewood, the I-25/Broadway Station, and the Alameda Station. Both the I-25/Broadway and Alameda Stations have direct access to Denver's light rail system.

Along Littleton Boulevard, there is also access to mass transit. The Arapahoe Crosstown (66) route runs east and west along Littleton Boulevard every 15 minutes throughout peak hours, every 30 minutes during midday hours and Saturdays, and every 60 minutes during evenings and Sundays. This bus stops at the Littleton Station.

Southwest Corridor

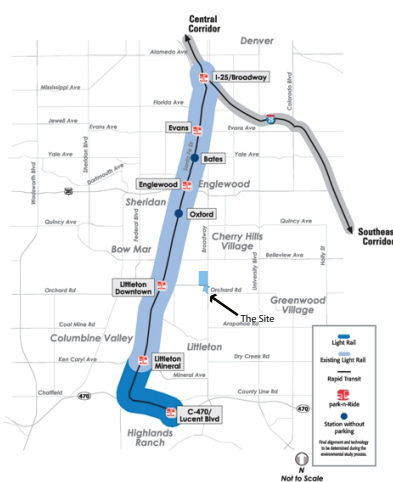


Figure 3.1.5: Southwest Corridor Light Rail Line Through Littleton

Image Courtesy of www.rtd-denver.com



Figure 3.1.6: Bus Service to the Site

Image Courtesy of www.rtd-denver.com

PEDESTRIAN ACCESS TO THE SITE

Sidewalks are located along all the roads. The general observation is that the wider the road, the wider the sidewalk. However, the width of these sidewalks is variable. Along South Broadway, the pavement from parking lots extends to the curb, and sidewalks are not defined as shown in Figures 3.1.7 and 3.1.8. Sidewalks along Littleton Boulevard are approximately eight feet wide.

Other streets on site have sidewalks which are approximately four feet wide as shown in Figures 3.1.9 and 3.1.10. All of the sidewalks are connected to the road with no buffer between the two.

There is little direct access to commercial buildings from the sidewalks. Most buildings are directly connected with the parking lots. To access many of the businesses, a pedestrian would have to cross a parking lot to reach the building.

There are two trails that are close to the site. Both the Big Dry Creek Trail and Orchard West Trail are within close proximity to the site.



Figure 3.1.7: Sidewalk Along South Broadway

Photo by K Burnham



Figure 3.1.8: Sidewalk Along South Broadway

Photo by K Burnham



Figure 3.1.9: Sidewalk Along South Bannock Street

Photo by K Burnham



Figure 3.1.10: Sidewalk Along South Bannock Street

Photo by K Burnham

SOILS OF THE SITE

There are three soils located on site as shown in Figure 3.1.11. The soils are Adena-Colby Fine Sandy Loam (AsD), Fondis Silt Loam (FdB), and Nunn Loam (NiB). There are no severe limitations to buildings for these soils.

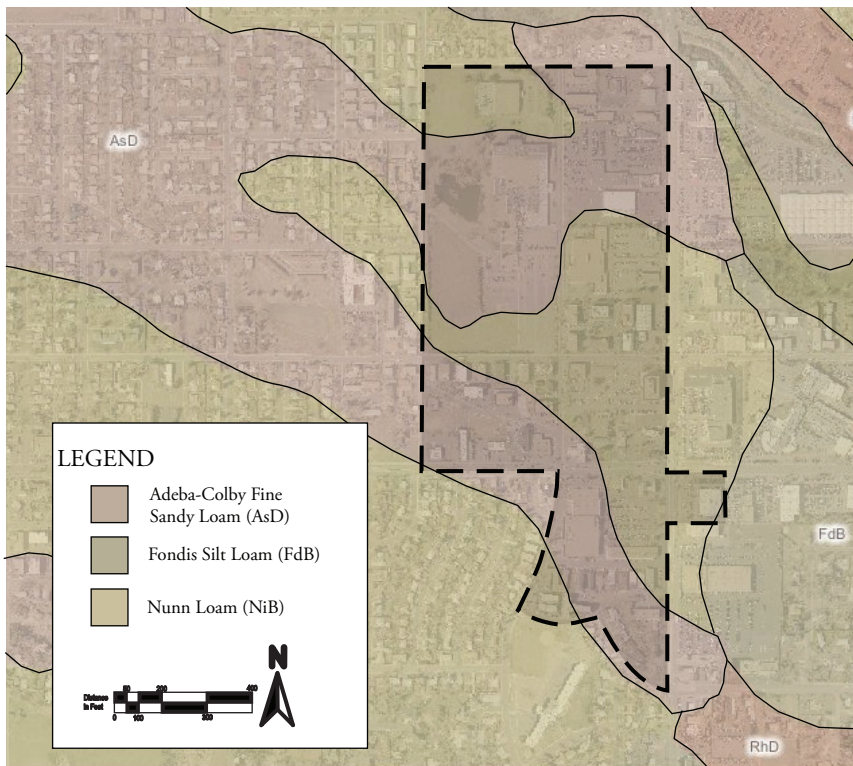


Figure 3.1.11: Soils

Adapted by K. Burnham from <http://gis.co.arapahoe.co.us>

SLOPES OF THE SITE

The slopes on site are fairly flat. There are no areas with more than a ten percent (10%) slope. The majority of the site has less than a five percent (5%) slope. Those areas with steep slopes are shown on Figure 3.1.12.

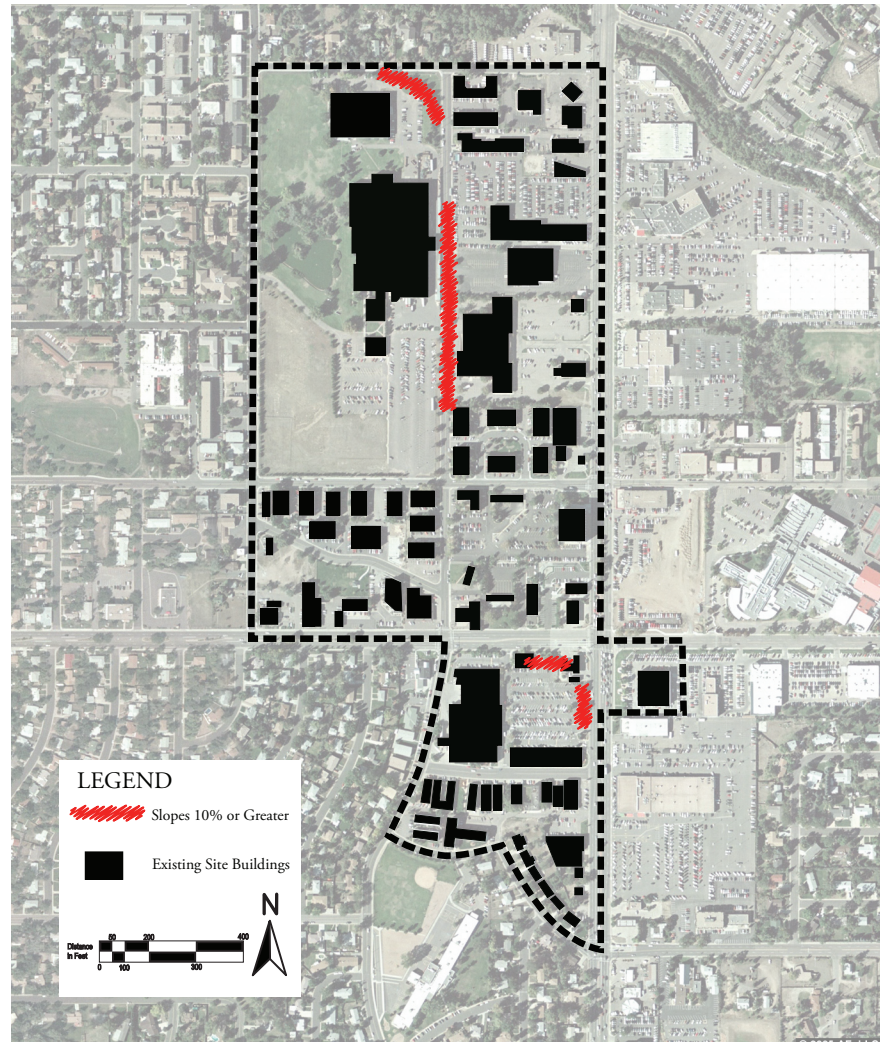


Figure 3.1.12: Existing Slopes

Adapted by K. Burnham from Google Earth

WATERSHED AND FLOOD PLAIN LOCATIONS

The site is located in two watersheds; the Slaughterhouse Gulch and Big Dry Creek Watersheds as shown on Figure 3.1.13. Both drainage ways are part of the larger South Platte River drainage system to the west. The South Platte is the main water source for the Denver Metro Area.

According to data from Arapahoe County, a portion of the site is located in a FEMA designated flood zone illustrated in Figure 3.1.14. The flood zone is designated “A,” which means that there is a one percent chance the area will flood on an annual basis. There is also a twenty-six percent chance that the area will flood over the course of a thirty year mortgage. While the flood zone is noted, detailed analyses are not performed for such areas, so no depths or base flood elevations are shown within these zones.

Figure 3.1.13 Watershed Locations
Adapted by K. Burnham from <http://gis.co.arapahoe.co.us>

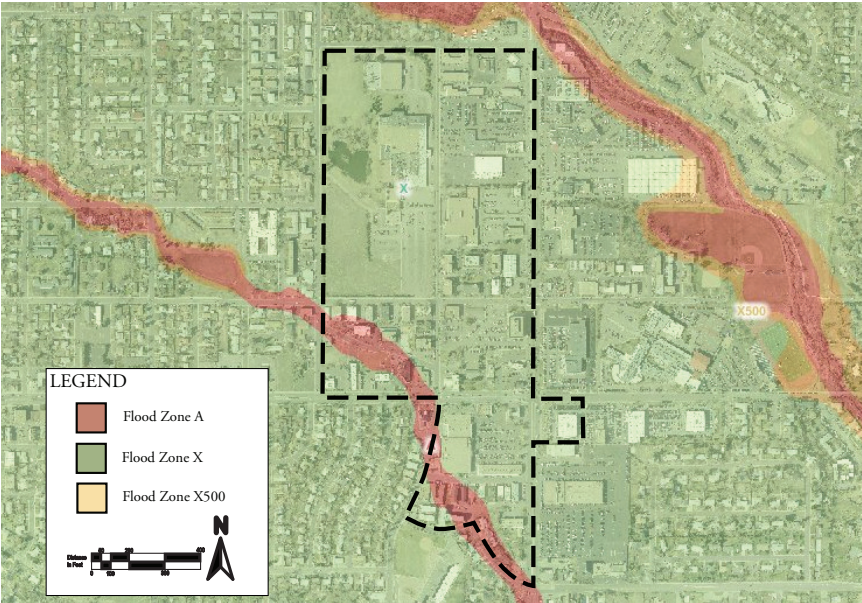
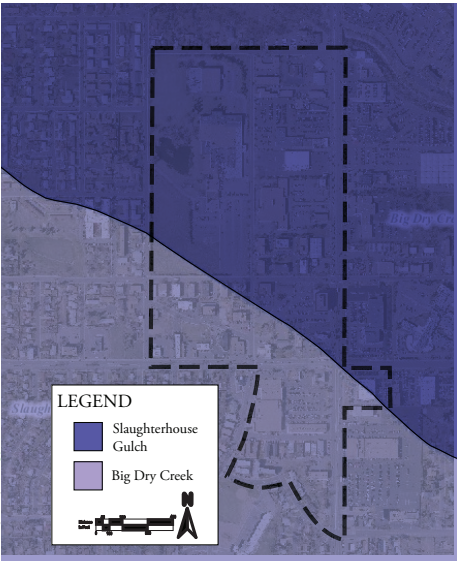


Figure 3.1.14: Floodplain Locations
Adapted by K. Burnham from <http://gis.co.arapahoe.co.us>

MACROCLIMATE

Littleton and the Denver Metro Area sit at the foot of the Rocky Mountains on the high plains. The city has a mild, sunny, semiarid climate with four distinct seasons. The weather of the city and the surrounding area is heavily influenced by their proximity to the mountains to the west. The climate, while generally mild, can be very unpredictable and volatile.

TEMPERATURES

Denver has a climate with temperatures that match the national average (See Figure 3.1.15). Daily highs and averages are even with those of the rest of the country. Daily lows are below the national average; in the summer months this makes for comfortable evenings and mornings. The average high temperature during the summer is 85 degrees (29C) and the average low is 56F (13C).

Summers are hot and dry and winters are generally cold and dry. Effects of orographic lift dry out the air passing over the Front Range shadowing the city from precipitation for much of the year. Orographic lift is represented in Figure 3.1.16. Also, warm Chinook winds can occasionally be felt in the winter as air passing over the mountains heats as it descends.

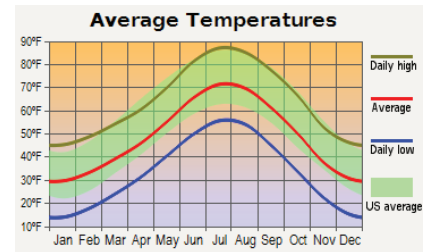


Figure 3.1.15: Average Temperatures

Image Courtesy of www.citydata.com

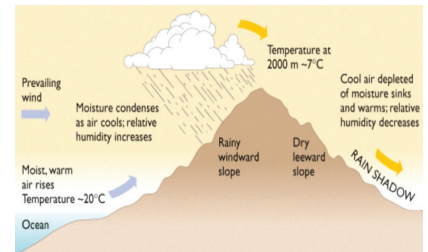


Figure 3.1.16: Orographic Lift

Image Courtesy of www.weather.about.com

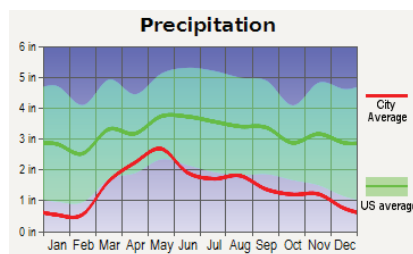


Figure 3.1.17: Annual Precipitation
Image Courtesy of www.citydata.com

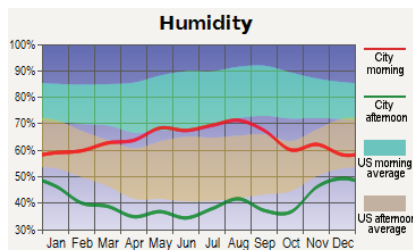


Figure 3.1.18: Average Humidity
Image Courtesy of www.citydata.com

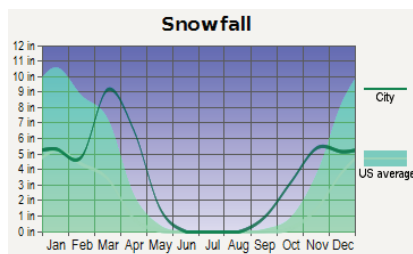


Figure 3.1.19: Average Snowfall
Image Courtesy of www.citydata.com

RAINFALL

Much of the Front Range is located in a rain shadow, which means that there is little annual rainfall as shown in Figure 3.1.17. Annual rainfall in the area is relatively low because of its location next to the mountains. Much of the water that supplies Denver comes from snowmelt which is stored in reservoirs scattered throughout the area. In general, the area experiences less rainfall than the national average and has been prone to drought in the past 10 years. Drought conditions have lead to water use restrictions for the Metro Area in recent years. In general, rainfall is less than the nation average on an annual basis.

HUMIDITY

Shown in Figure 3.1.18, both morning and afternoon humidity levels for the region are well below the national average. Morning averages are greatest during later summer months and are least during winter months. Conversely, afternoon humidity averages are greatest during winter months and least during summer months. Starting in mid-July, monsoonal flows bring tropical moisture to Denver. With these flows come frequent short late-afternoon thunderstorms. Despite this tropical moisture, humidity levels during the day generally remain very low.

SNOWFALL

Snowfall for the Front Range is within the national averages for most of the year as illustrated in Figure 3.1.19. However, there are spikes in snowfall during the late spring and fall. Measurable amounts of snow have fallen in Denver as late as Memorial Day and as early as Labor Day, and trace amounts have been recorded in every month of the year. In the autumn, the tropical monsoon flow dies down. As arctic air from Canada approaches, it sometimes combines with moisture from the Pacific Northwest to bring significant snowfall to the Front Range. March is Denver's snowiest month, averaging 11.7 in (29.7 cm) of snow.

SUNNY DAYS

In general, Littleton experiences above average amounts of sunshine throughout the year (See Figure 3.1.20 and Figure 3.1.21). The National Oceanic and Atmospheric Administration says Denver receives about 250 days of sunshine a year.

WINDS

Wind speeds for the region are greatest during spring months and are least during summer months as shown in Figure 3.1.22. The Chinook winds moderate the region's temperature during winter months. This allows Denver residents to experience temperatures well above other cities of the same latitude during colder periods.

MICROCLIMATE

The microclimate of the site varies from location to location and during different times of the year. Large amounts of impervious pavement throughout the site create heat island effect in and around parking lots during summer months.

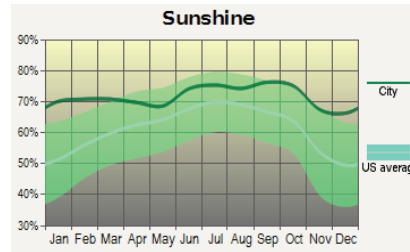


Figure 3.1.20: Average Sunshine
Image Courtesy of www.citydata.com

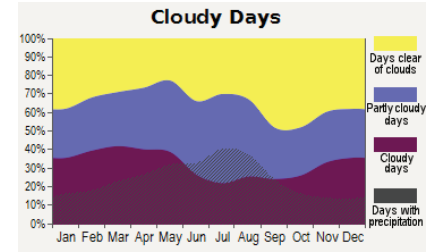


Figure 3.1.21: Average Cloudy Days
Image Courtesy of www.citydata.com

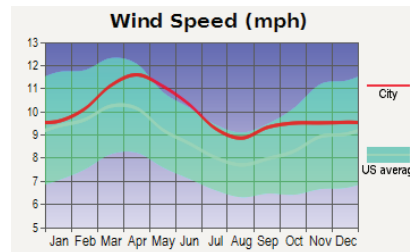


Figure 3.1.22: Average Winds
Image Courtesy of www.citydata.com

ZONING

There are multiple zoning classifications on and surrounding the site illustrated in Figure 3.1.23. The different classifications are used to separate areas of use for the area. Currently, zoning for the site permits small neighborhood business, community business, single-family and multifamily residential and industrial uses. None of the zones allow for multiple uses between residential and commercial. The current zoning for the property on site is:

- B-1 – Neighborhood Business District
- B-2 – Community Business District
- I-P – Industrial Park District
- PD-C – Planned Development District Commercial
- T – Transitional
- R-2 – Residential Single Family District
- R-3 – Residential Single Family District
- R-5 – Residential Multiple Family District

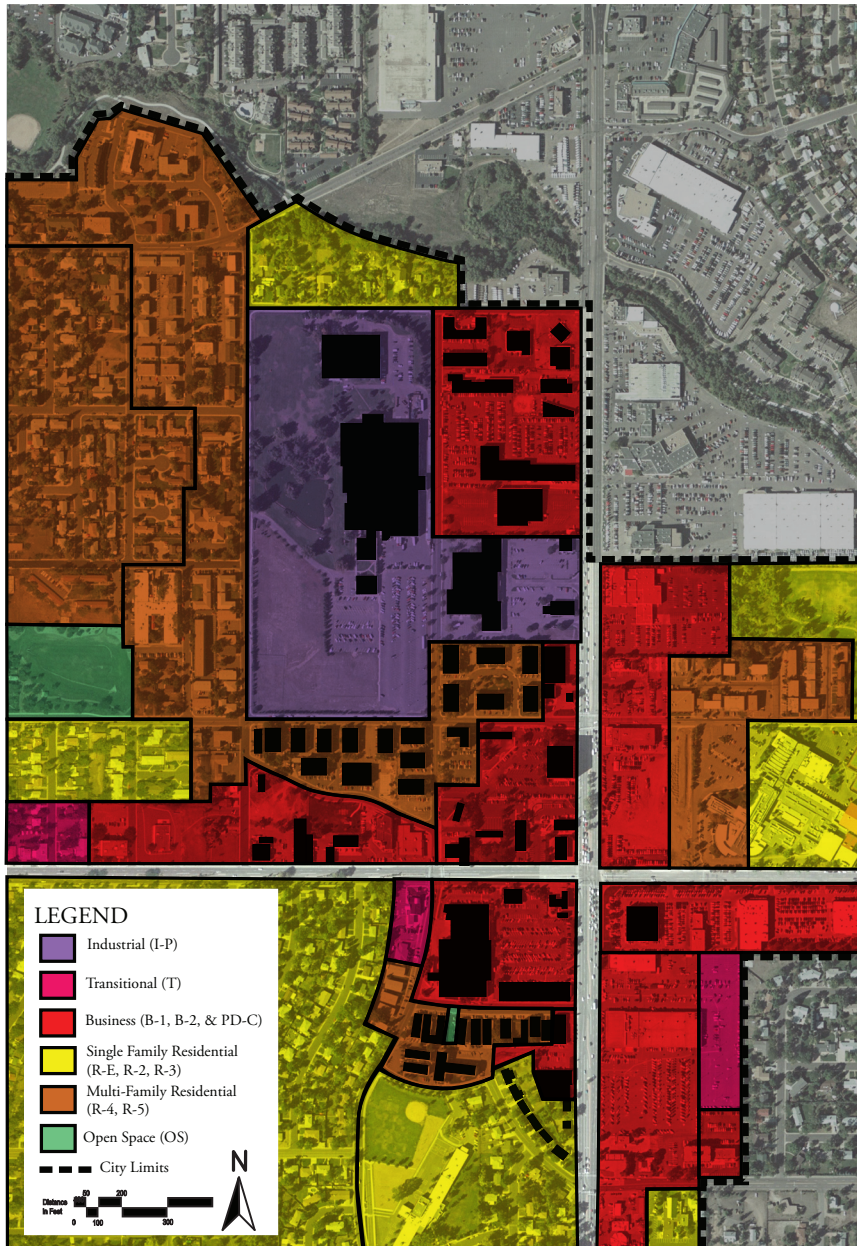


Figure 3.1.23: Existing Zoning

Adapted by K. Burnham from www.littletongov.org and Google Maps

EXISTING OPEN SPACE AND TRAILS

Denver, as a whole, has an abundance of open space for such a large city. Not only is there a large percentage of open space within the Metro Area, there are also large amounts of federally owned land in the foothills which many people routinely use for recreation.

Within the Metro Area, there are numerous parks which are connected by a network of trails. Many of the major open spaces in the Metro Area are connected by paved walking paths and bicycle trails. Trails such as the Highline Canal Trail and the Platte River Trail connect to the Metro Area. The trail system for the City of Littleton is shown on Figure 3.1.24.

Much like Denver, Littleton has a large amount of open space. There are proportionally larger amounts of open space within Littleton's city limits as compared to similar cities nationally. According to the City of Littleton's Business and Industry Affairs Department, there is approximately four times more open space within the city limits than the national average. South Suburban Parks and Recreation manages many of the area's parks, with the city managing the others.

Littleton is also connected to Denver through the trail system. Every major drainage way within the city limits of Littleton contain a trail of some kind,

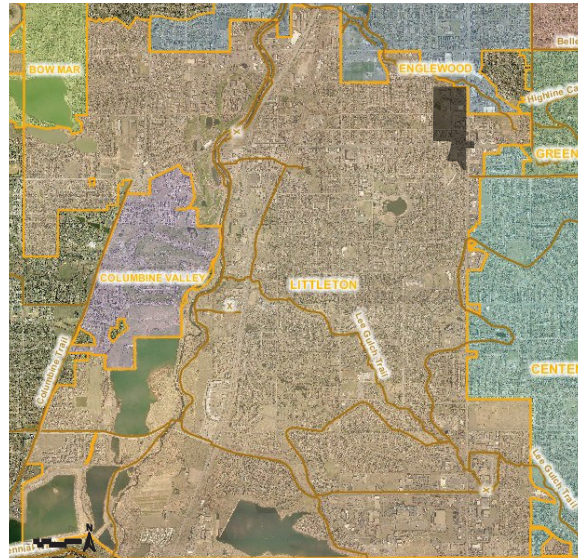


Figure 3.1.24: Trail System in Littleton

Image Courtesy of <http://gis.co.arapahoe.co.us>

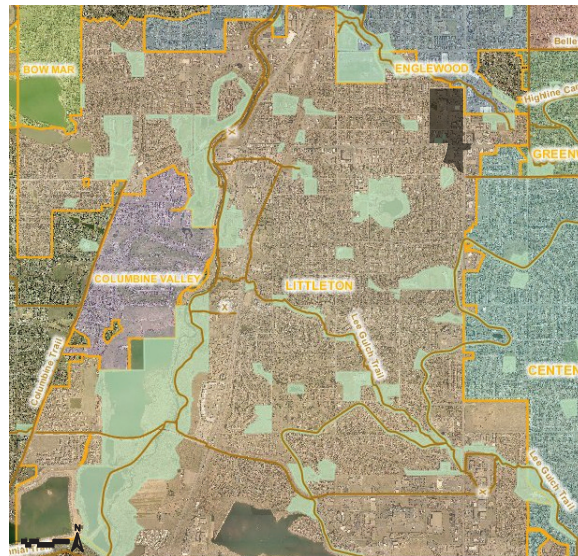


Figure 3.1.25: Open Space and Trail System in Littleton

Image Courtesy of <http://gis.co.arapahoe.co.us>

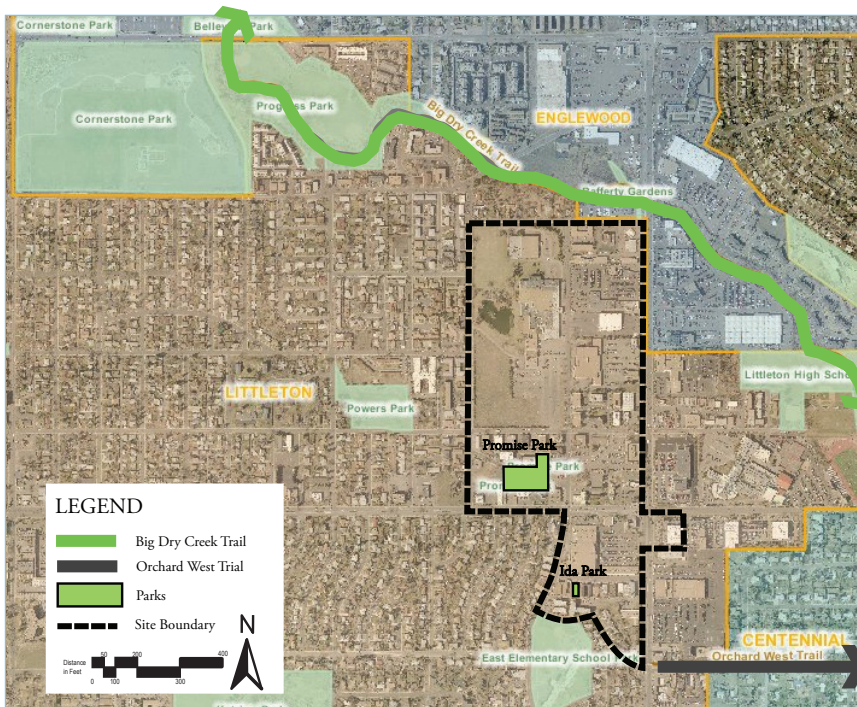


Figure 3.1.26: Trails Near the Site in Littleton
Adapted by K. Burnham from <http://gis.co.arapahoe.co.us>

either paved or unpaved. Trails and open space within Littleton can be seen on Figure 3.1.25.

The site in northeast Littleton has no direct trail access, although the Big Dry Creek Trail passes north of the site before it crosses under South Broadway. The Orchard West Trail stops at South Broadway before it enters the site off of Orchard Road. The trails near the site are shown in Figure 3.1.26.

There are two existing parks on the site. Promise Park, managed by South Suburban Parks and Recreation, is divided by West Powers Place and has two distinct parts. The northern section contains a paved basketball court and small skate park. The southern section is a more traditional park with a lawn, shade structure and trees. Promise Park is relatively small. The other park is Ida Park and is also managed by South Suburban. It is located along West Ida Avenue. This small park contains a small play structure, picnic benches and a small lawn area.

Norgren owns the largest amount of open space on the site, but it is not accessible to the public.

RESIDENTIAL BUILDINGS ON SITE

Many of the buildings on site were built in the 1950s and 1960s (See Figure 3.1.27). Many of the apartments along West Powers Avenue are in poor condition. They are in need of extensive rehabilitation because of their age and lack of routine maintenance. Along West Ida Avenue, multifamily buildings are in somewhat better shape. The grounds (see Figure 3.1.28) show greater signs of routine maintenance.



Figure 3.1.28: Interior Courtyard
Photo by K. Burnham

In Littleton, rental housing is more concentrated north of Ridge Road, as shown in Figure 3.1.29. The Littleton Housing Authority has acquired, and is continually trying to acquire more rental units in the area to support the need for affordable housing in Northeast Littleton. The Housing Authority has also moved its offices off of South Bannock to increase their presence in the area.

The architecture for the site varies depending upon the location

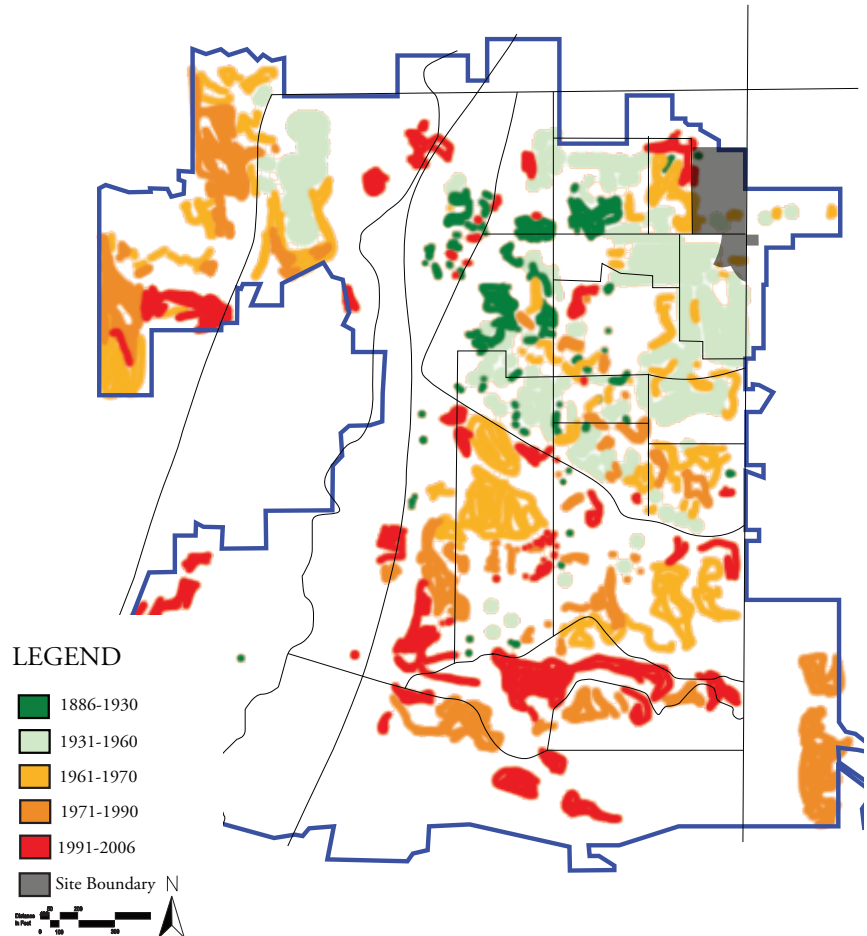


Figure 3.1.27: Age of Structures by Year Built in Littleton
Adapted by K. Burnham from www.littletongov.org

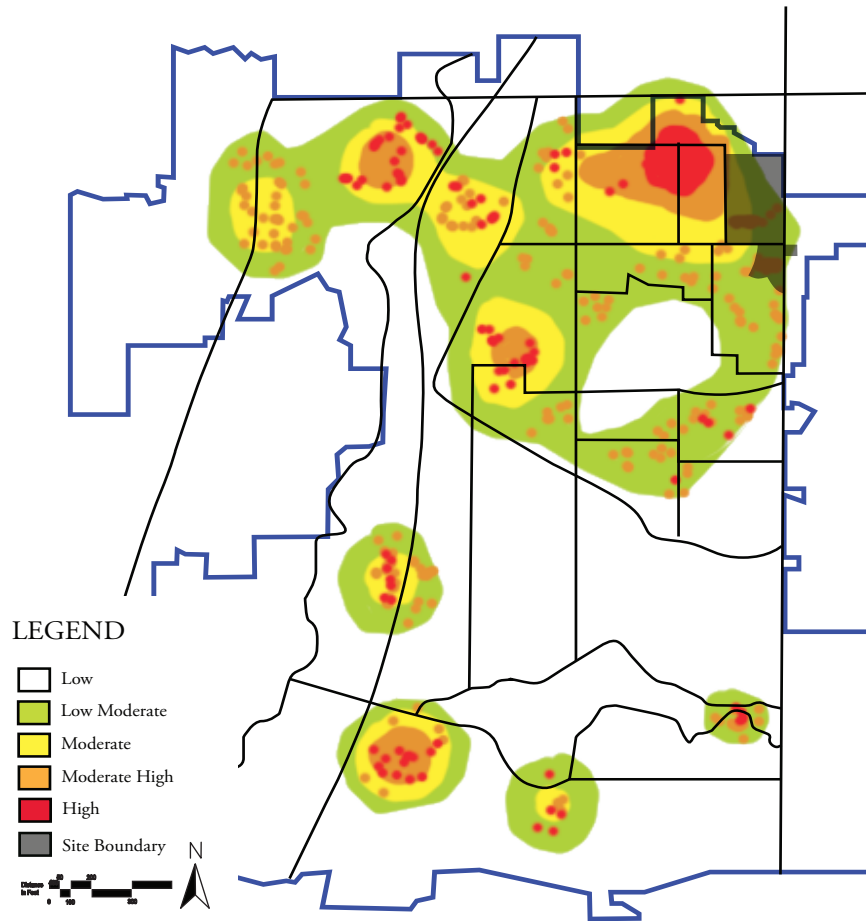


Figure 3.1.29: Rental Distribution in Littleton
Adapted by K. Burnham from www.littletongov.org

as seen in Figures 3.1.30 and 3.1.31. Along Ida, South Delaware, and Bannock south of Littleton Boulevard, there are many two story apartment complexes with the first story partially below grade. Complexes along West Powers Avenue are three to four story apartment buildings and all front the road with parking between.



Figure 3.1.30: Apartments on Bannock
Photo by K. Burnham

Neighborhoods south of Littleton Boulevard and west of Bannock are single family detached with small yards. All the homes are made primarily of brick and are set back from the road. Driveways are located in the front of the homes. Residences north of Rafferty Gardens are large and back up to Big Dry Creek.



Figure 3.1.31: Apartments on West Powers Place
Photo by K. Burnham

COMMERCIAL BUILDINGS ON SITE

Much like the residential buildings, several commercial structures on site are approximately 40 to 50 years old (as seen in Figure 3.1.27). Many of these buildings are somewhat worn down, and could use some form of renovation. The commercial buildings also lack unifying character Figures 3.1.32 and 3.1.33. They are constructed of differing material and are of varying heights and use.



Figure 3.1.32: Businesses along South Broadway off of West Ida

Photo by K. Burnham



Figure 3.1.33: Businesses along South Broadway just North of West Powers

Photo by K. Burnham



Figure 3.1.34: Chipotle

Photo by K. Burnham

Commercial areas have good visibility from both South Broadway and Littleton Boulevard. However, businesses along South Broadway are located away from the street, many times across a large parking lot. It is difficult to see these businesses while driving along South Broadway at 35 to 40 miles per hour.

New businesses such as the Chipotle (see Figure 3.1.34) and the renovated Arby's along South Broadway are located directly adjacent to the street, making them visible to automobiles as they drive by or are stopped at the intersection of Littleton Boulevard.

VIEWS

Outward views toward Denver's Skyline and the Front Range are at a premium in Littleton. While views toward Denver and the mountains are limited, there are directed views along South Broadway and South Bannock as seen in Figure 3.1.35.



Figure 3.1.35: View to Mountains from South Broadway

Photo by K. Burnham

Along Bannock, apartment buildings have good visibility from second and third story windows. On the upper floors (third and fourth stories) of many buildings, there are outward views to the skyline to the north and the mountains to the west. First and second floors of many buildings have limited views because of mature vegetation and apartment buildings surrounding the site.

The Norgren site is mostly open, and many of the surrounding apartment buildings have good views to the grounds from upper floors as illustrated in Figure 3.1.36.



Figure 3.1.36: View from Third Floor of Apartment Building on West Powers

Photo by K. Burnham

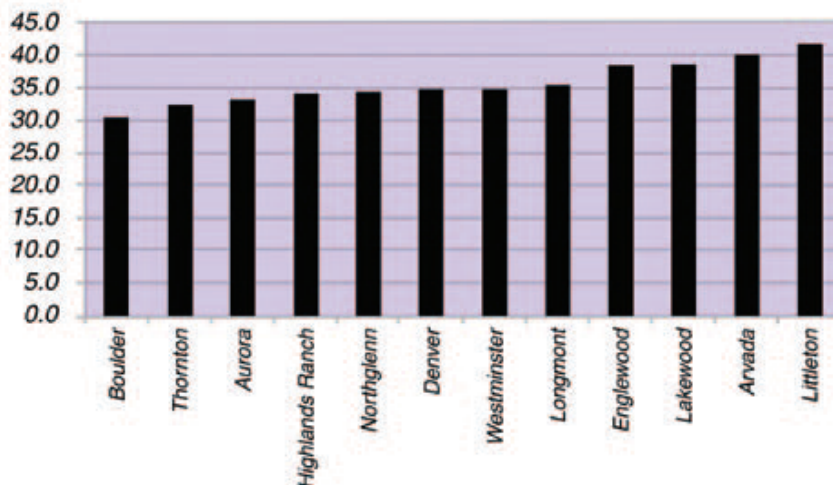


Figure 3.1.37: Average Ages of Metro Area Residents
Adapted by K. Burnham from www.littletongov.org

DEMOGRAPHICS AVERAGE AGE

The average age of a resident in Littleton is relatively high. Compared to other suburbs in the Metro Area, Littleton residents have the highest median age. Figure 3.1.37 shows the median ages of residents of all the major cities in the Denver Metro Area in 2007. Littleton has the highest average age.

Along with the aging population, Littleton Public Schools have seen dramatic decreases in student population in the past 14 years. In November of 2008, the Board of Education voted to close Ames and Whitman Elementary Schools because of dwindling enrollment and budget shortfalls. The low enrollments made the schools difficult to sustain.

DEMOGRAPHICS AVERAGE INCOME

Figure 3.1.38 shows the average income distribution of Littleton's residents. There are several areas of Littleton with household incomes well above \$100,000 per year. Conversely, there are areas in Littleton where residents are earning considerably less. The northeastern section of the city has a higher concentration of residents living in poverty than does the southern section of the city.

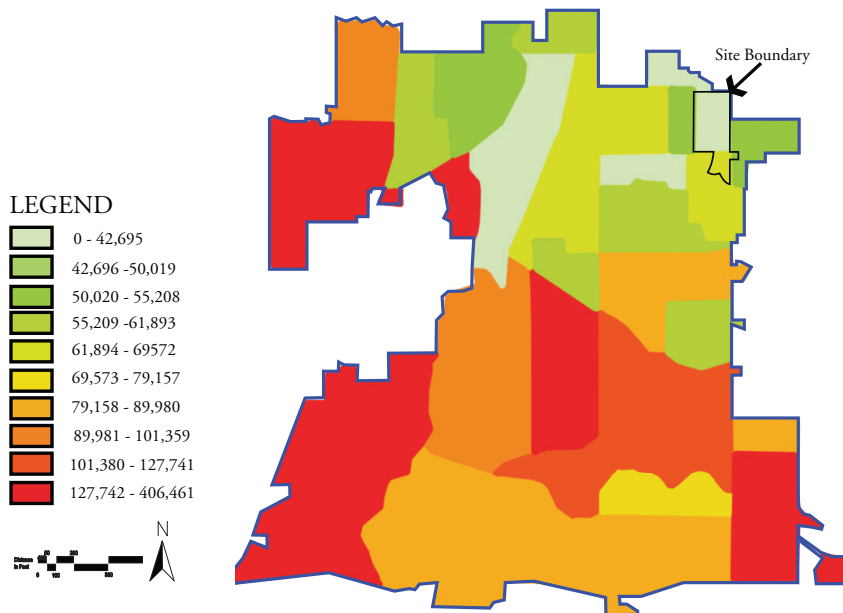


Figure 3.1.38: Average Household Income Distribution in Littleton
Adapted by K. Burnham from www.littletongov.org

DEMOGRAPHICS CRIME

Northeast Littleton has higher instances of crime than the rest of Littleton. Of the individual crimes reported, the following were reported more frequently by the Littleton Police Department in northeast Littleton than other areas of the city:

- Graffiti
- Domestic Violence
- Theft
- Trespassing
- Criminal Mischief
- Assault

DEMOGRAPHICS ECONOMY

Growth in surrounding communities like Highlands Ranch and Unincorporated Jefferson County has been dramatic in the last two decades. While the population of Littleton has remained steady, these areas have seen exponential growth. Newer commercial areas in Highlands Ranch are drawing business away from established areas in Littleton. This growth has had little effect on the area directly surrounding the northeast Littleton site, but other areas of the city have been dramatically affected. New growth in surrounding communities has detracted from Littleton's overall tax base.

Littleton has an economy which is geographically divided in two. Figures 3.1.29 (rental distribution), 3.1.27: (age of buildings), and 3.1.38 (income distribution) illustrate the

city's economy is basically divided along Ridge Road.

Areas of Littleton south of Ridge Road have an economy which remains relatively strong. Housing stock is newer, shopping centers are often busy, and residents tend to be highly educated. The areas south of Ridge Road also have residents making above average incomes.

Conversely, Littleton's economy north of Ridge Road is struggling. It has an older housing stock with high percentages of deteriorating rental units, and shopping centers which are often not busy and not geared toward retail. There are larger percentages of people living in poverty and higher rates of crime. Areas north of Ridge Road, such as the site at Littleton Boulevard and South Broadway, have been targeted by the Business/Industry Affairs Committee for redevelopment because of their age, deterioration, and potential revenue for the city.

Littleton, unlike other municipalities throughout the region, does not grow its economy by luring businesses from elsewhere by offering tax breaks and incentives. Littleton's Business/Industry Affairs Department prescribes to a philosophy known as "Economic Gardening" (See Figure 3.1.39). This philosophy focuses on investing in local businesses and entrepreneurship. The use of GIS, databases as well as other informational tools help to increase

competitiveness of local business owners by identifying the market potential for their businesses. Since 1989, this program has helped to grow Littleton's economy from 15,000 jobs to around 30,000. During this time, the city has spent no money on incentives or tax breaks for recruitment of new businesses.

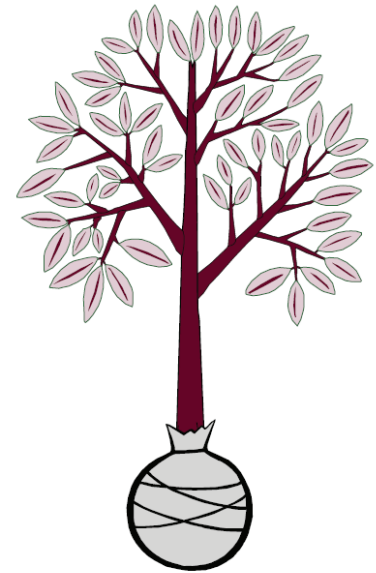


Figure 3.1.39: City of Littleton Business/Industry Affairs Department "Economic Gardening" Logo
Image Courtesy of www.littletongov.org



chapter 3.2:

site analysis

PROCESS OF ANALYSIS

The site analysis combines the site inventory and research within the context of service as diagrammed in Figure 3.2.1. The goal of this project is to achieve service in northeast Littleton. In order to achieve service, a thorough site inventory and research is conducted. The inventory details the existing conditions on site. Research, both in the literature review and the precedents, describe what forms design could take in response to existing conditions.

The site analysis synthesizes the site inventory and research to determine where programmatic elements could potentially be placed to achieve service to Littleton.

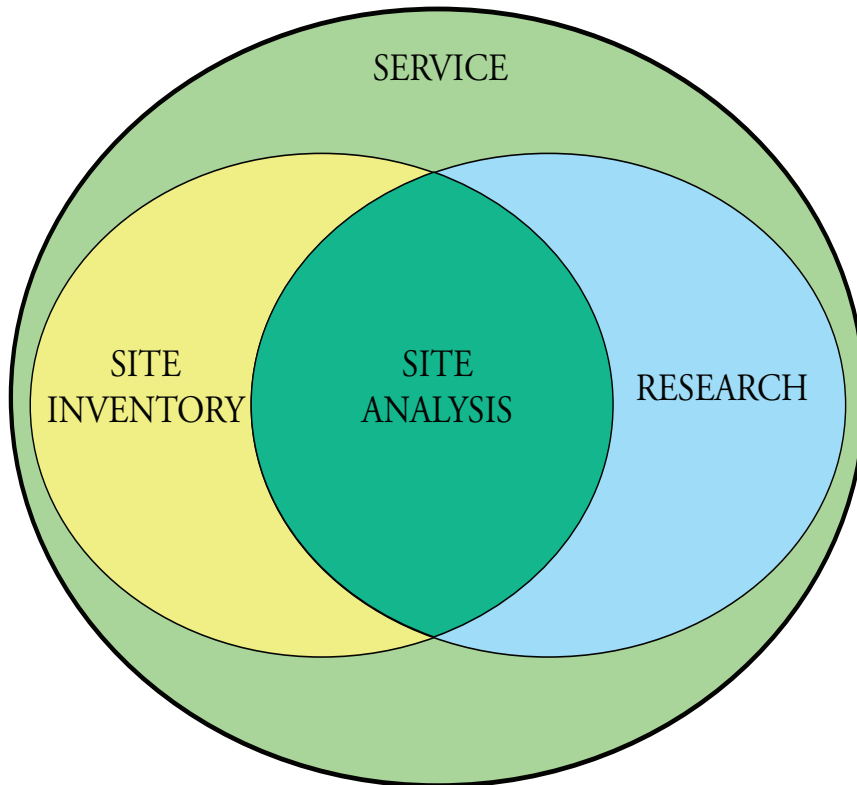


Figure 3.2.1: Process Diagram of Analysis

Created by K. Burnham

CLIMATE AND WALKABILITY

Macroclimatic factors for Denver tend to favor pedestrian oriented development. The macroclimate of the region is arid and is relatively comfortable during most of the year. The dry air makes spending time out of doors in Denver more comfortable than other cities with high humidity. High numbers of days with clear blue skies also encourage people to be active outside. Walkable developments in the Denver Metro Area have high potential to be used throughout the year because of the macroclimate.

STREET LAYOUT AND WALKABILITY

The existing street layout is not conducive to a walkable environment. Several blocks are well over 400 feet long. According to Sustainable Urbanism, to be walkable, blocks should be between 300 to 400 feet.

The Norgren site makes walkability across the site difficult. People wishing to walk from South Broadway west have to walk around the site. The site itself is 1/3 of a mile long from north to south and is inaccessible because it is fenced off. Essentially, Norgren cuts off western neighborhoods to South Broadway. To promote walkability, the street layout could be extended across the Norgren property to the west to South Broadway as illustrated in Figure 3.2.2.

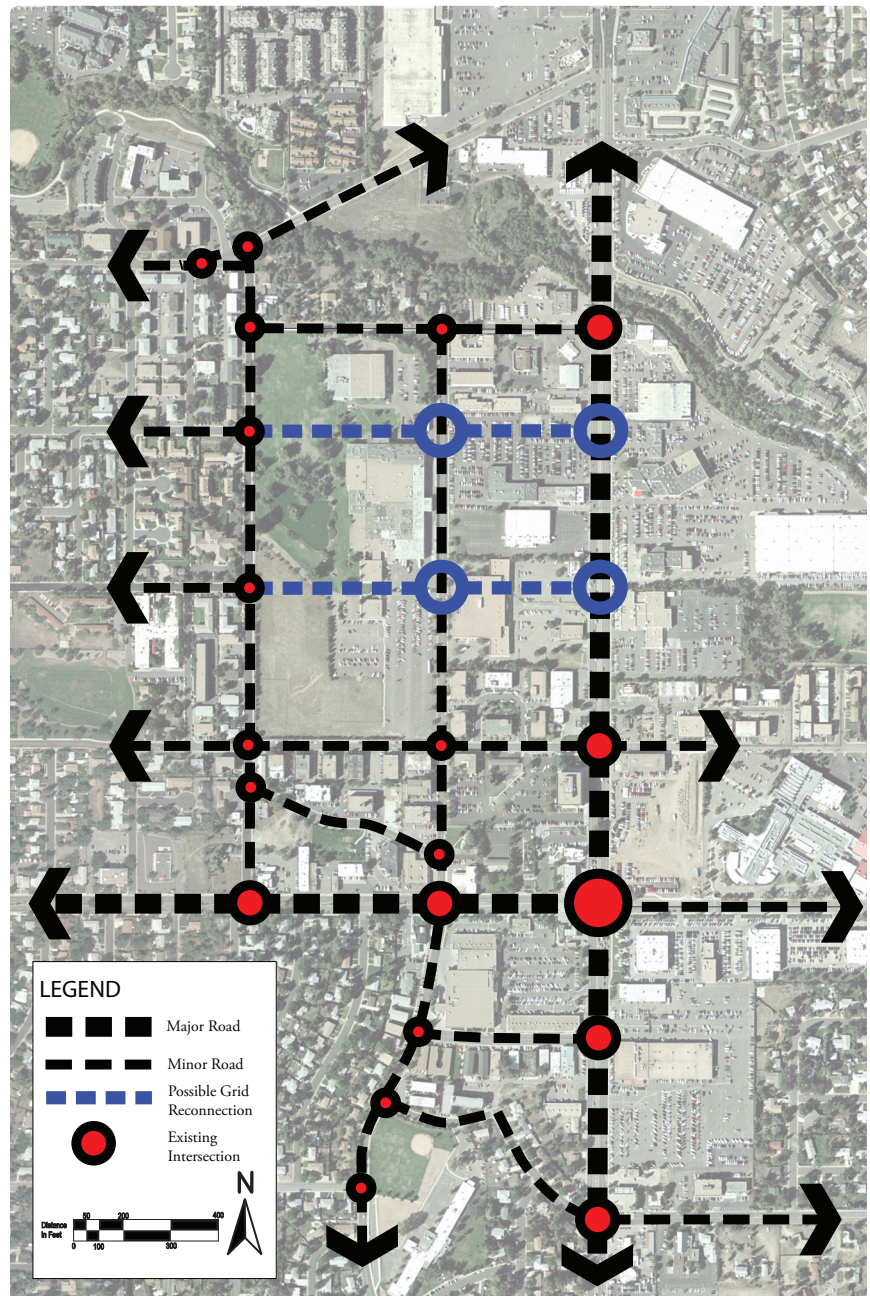


Figure 3.2.2: Grid Reconnection Across Norgren to South Broadway
Adapted by K. Burnham from Google Maps

TRANSIT CONNECTION

The existing sidewalks also do not promote walkability. The sidewalks are very narrow or nonexistent, especially along South Broadway. On secondary streets, the sidewalks are just wide enough for one person to comfortably walk.

Littleton's roads are heavily used by people commuting to and from surrounding suburbs. The city's location makes it a convenient place to live if commuting elsewhere in the region. Currently high percentages of commuters drive to work on a daily basis. Commuters travelling through Littleton tend to take larger arterials such as Santa

Fe Drive shown on Figure 3.2.3 because of its high speed limit and HOV lane. Broadway is often avoided during commutes because of traffic congestion and relatively low speed limits.

Commuters to and from Littleton would benefit from an enhanced public transportation route between

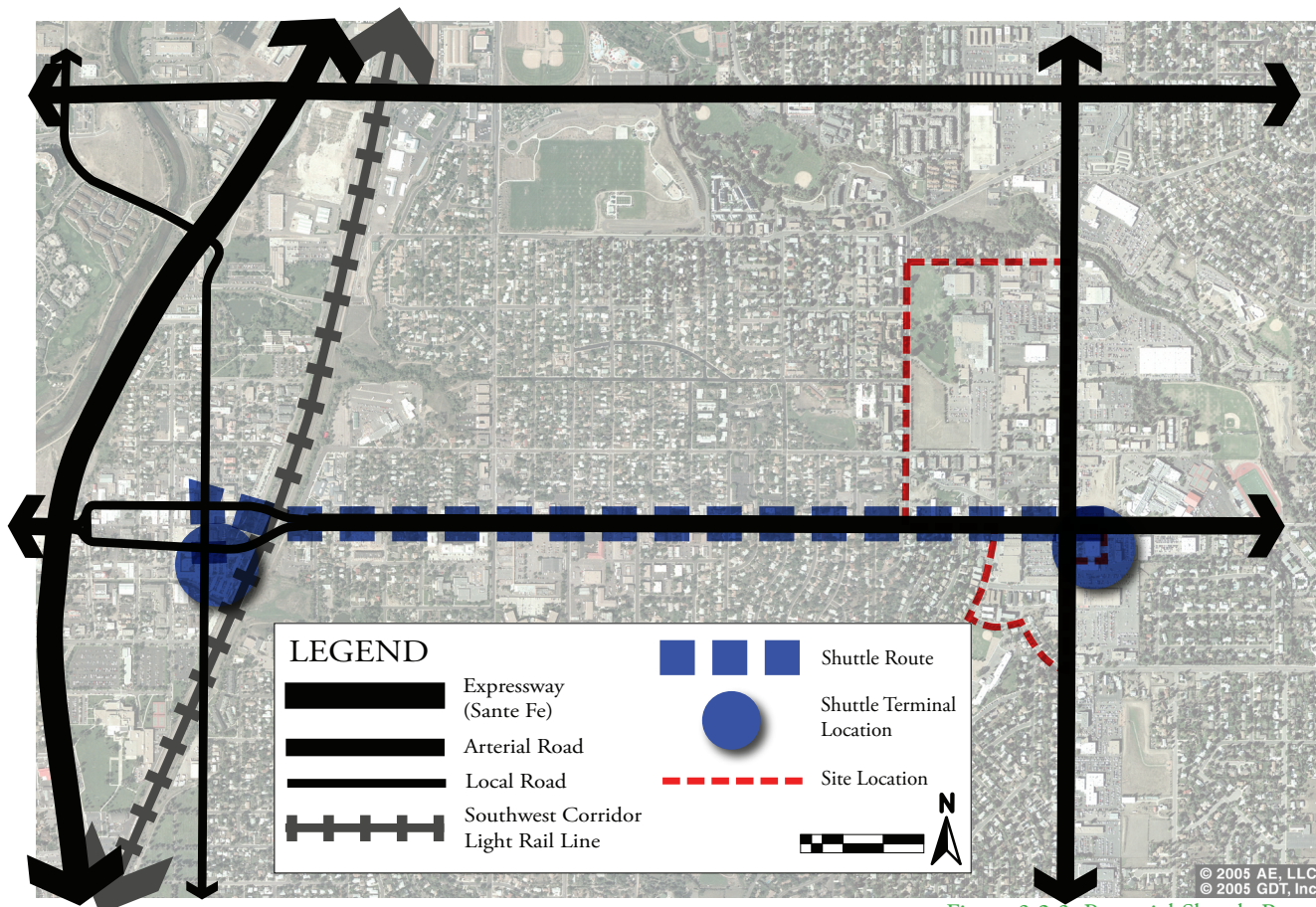


Figure 3.2.3: Potential Shuttle Route Down Littleton Boulevard

Adapted by K. Burnham from Google Maps

South Broadway and Downtown Littleton along Littleton Boulevard, shown in blue on Figure 3.2.3. A circulating bus would give people living in surrounding areas more options for commuting around the region. Anyone living within walking distance of a transit stop could choose to drive or utilize the enhanced public transportation for their commute.

In the past several years, Littleton has seen dramatic increases in ridership of public transportation. Littleton has very good access to the light rail and the bus system. The Southwest Corridor light rail line, which runs from Littleton to Denver, is highly utilized. However, parking is limited at the Park-n-Ride stops near stations. Providing a strong connection between the site and the Littleton Station, such as through a regular shuttle service, could decrease the need for parking next to the station and could boost light rail ridership along the Southwest Corridor from people living in Centennial, Englewood, and Greenwood Village.

OPEN SPACE AND CONNECTION OF TRAILS

Figure 3.2.4 shows the existing public and private open space on the site. Ida Park and Promise Park are the only public parks on site. These parks make up less than two percent (2%) of the total site.

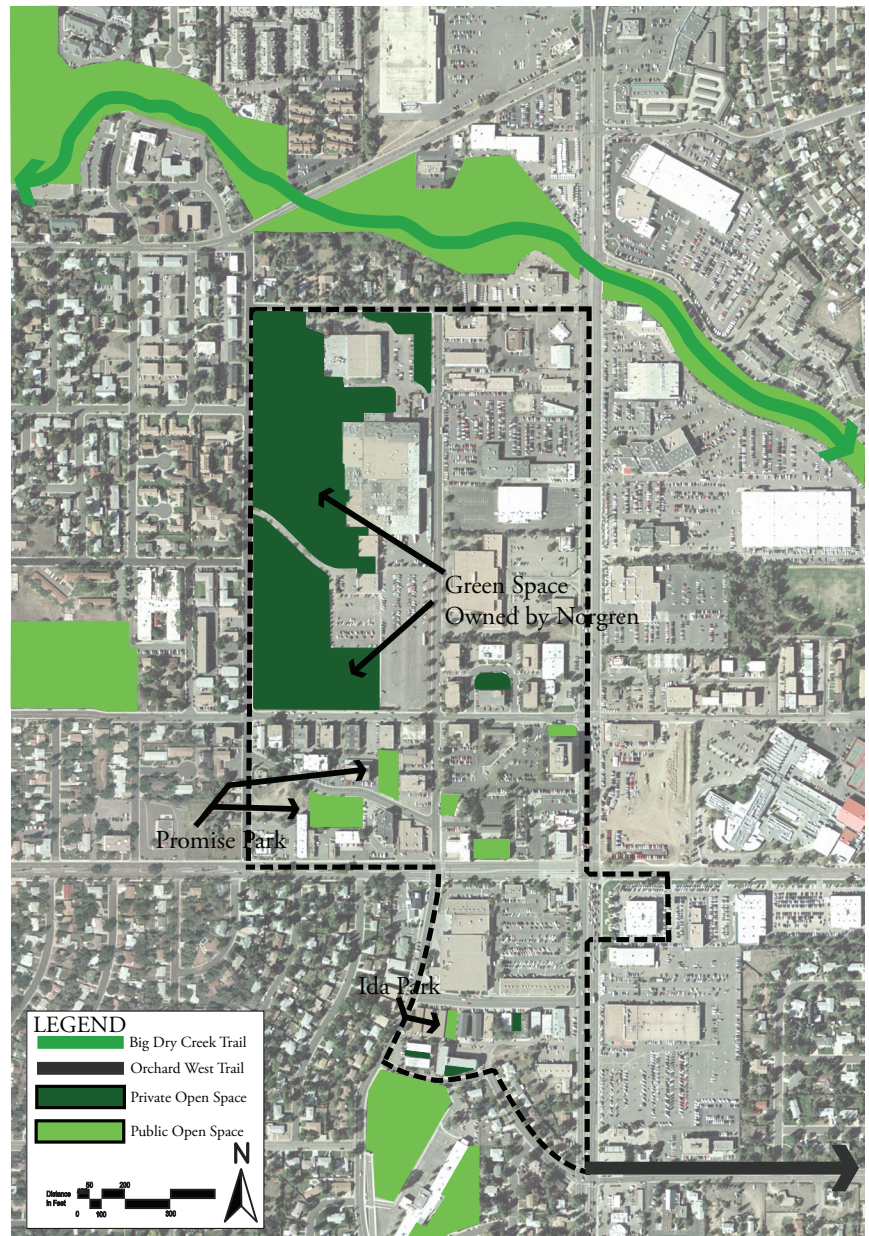


Figure 3.2.4: Existing Public and Private Open Space
Adapted by K. Burnham from Google Maps

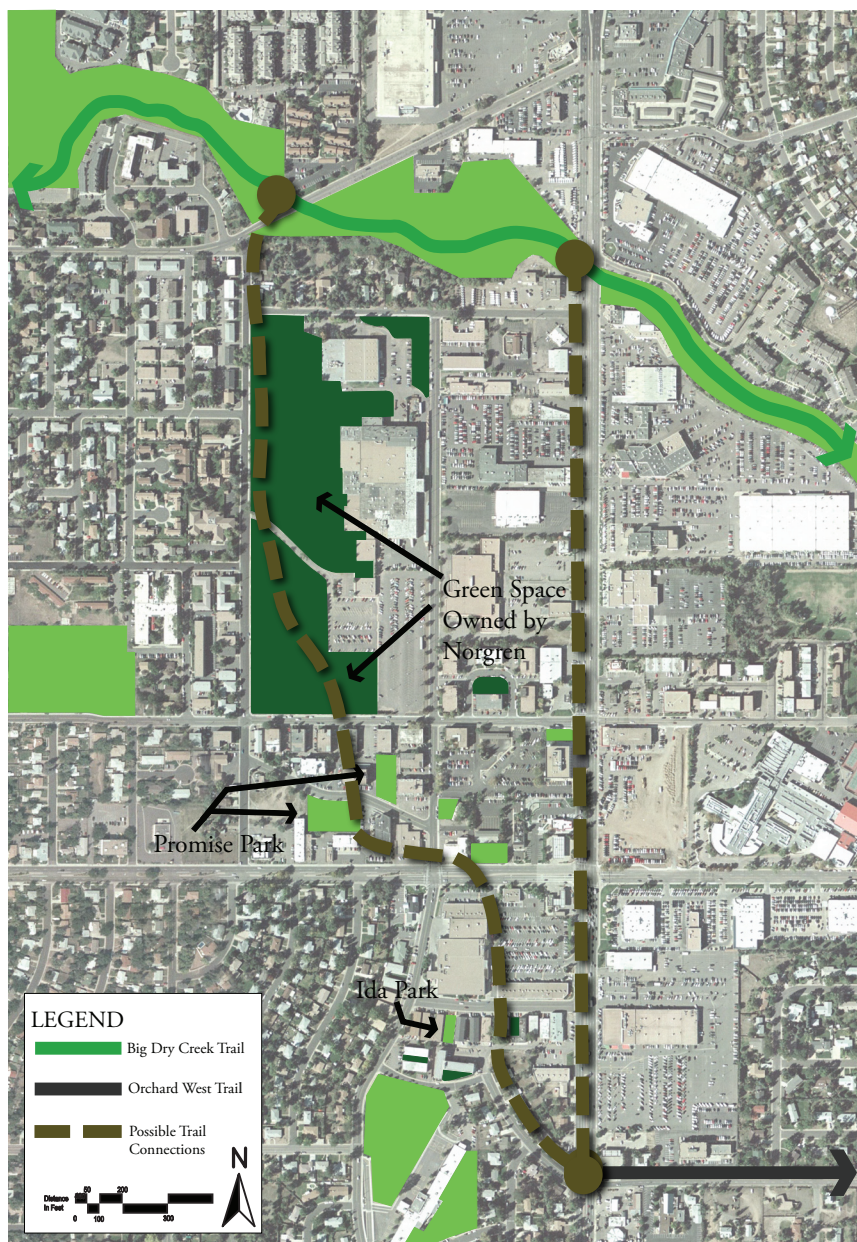


Figure 3.2.5: Potential Connection of Trails Across the Site
Adapted by K. Burnham from Google Maps

Littleton, as a city, has over twenty-five percent (25%) public parks and open space. The site, to be consistent with the rest of the city, needs more park space and trail connectivity.

Norgren has a large percentage of open space which could be developed into a park or natural amenity. Currently this space is closed to the public, but any redevelopment of the site could open up areas to the public as open space. There is also an existing pond on the Norgren property which could be utilized as focal point within the open space. A well designed open space would attract people to the area which would benefit local businesses. Connecting the open space to an integrated trail system would add to the overall connectedness of Littleton to the Metro Region.

There currently are no trails existing on site, but there is potential for connection to existing trails from both the north and south as shown in Figure 3.2.5. The Big Dry Creek Trail runs along Big Dry Creek just north of the site. There are two potential connection points to the site along this trail. One is off of South Broadway just north of Rafferty Gardens Avenue before the trail crosses under the road. The other connection is off of South Delaware Street, just north of the site.

Also, the Orchard West Trail could be extended across Broadway, past East Elementary, and up through the site. To encourage use, developing

a trail system which is aesthetically pleasing needs to be taken into consideration. The planning needs to include more than just adding a bicycle lane to an existing street. To encourage use, trails should promote relaxation and recreational possibilities. There should be areas for people to rest along the trail system, and these areas should incorporate shade elements and views toward the mountains and Downtown Denver when possible. A well developed trail system is important to the overall development of the site.

ZONING AND AESTHETICS

The site has a wide range of zoning as seen in Figure 3.1.22. There are areas that allow business development only (B-1, B-2, and PD-C), residential development only (R-2, R-3, and R-5), and industrial only (I-P). None of these zones allow for more than one use, except for transition (T), which allows for small business mixed with residential. The aesthetic character of an urbanized area is greatly dependent upon the physical form and condition of the structures within that area. The existing zoning code only addresses use, and not the form of the buildings.

Northeast Littleton would greatly benefit allowing a form-based code rather than keeping with the existing zoning that currently exists within the city. Incorporating

form-based codes, particularly along South Broadway and Littleton Boulevard, would enhance the overall visual appeal of the area. The focus would not be on land use, rather the physical form of the structures. The structures would have to adhere to a certain unified urban appearance rather than a specific isolated land use. The uses of the structures could be adaptive and flexible to meet the needs of the businesses. Transition from a conventional zoning to form-based codes would unify the area physically and likely attract newer businesses to northeast Littleton.

LITTLETON'S ECONOMY

There are large economic discrepancies between areas north of Ridge Road and areas south of Ridge Road, as illustrated in Figures 3.1.28 (rental distribution), 3.1.26: (age of buildings), and 3.1.37 (income distribution). Areas north of Ridge road have higher instances of crime and much larger percentages of people are living near the poverty line. There is also little in the way of retail or entertainment in northern section of the city. The opposite is true of areas south of Ridge Road where households are more affluent. Housing is newer and better maintained. Commercial areas south of Ridge Road cater to a wide variety of people, and there are distinct areas that offer both retail and entertainment.

Littleton should look for ways to redevelop north of Ridge Road to diminish dissimilarities between the two areas. Any redevelopment in northeast Littleton ought to focus on revitalizing its aging housing stock and attracting diverse retail, commercial, recreation, and entertainment opportunities to the area. Littleton's Housing Authority has committed to improving the conditions of recently purchased buildings along West Powers Circle and is planning on purchasing other buildings in the area. The city's Economic Gardening policy has been proven to work in attracting viable jobs, and could aid in the revitalization of northeast Littleton. Increases in public amenities, such as parks and trails, would also be likely to attract residents and patrons to the area.

BUILDINGS TO BE RETAINED

Determinations about which buildings could be redeveloped and rehabilitated need to be made prior to redevelopment. Figure 3.2.6: shows the buildings and uses which are, based on visual inspection, to be retained and removed. Structures labeled in green might not necessarily be in good condition, but they may have character worth retaining or they shape the corridor well. Those colored yellow have uses which are worth retaining, but do little to shape space or add to the overall aesthetic quality or character of the site. Those labeled in red have

uses and structures which are to be removed because they are either vacant or their current use will not be retained in redevelopment.

SUITABLE LOCATIONS FOR SITE ELEMENTS

The analysis has determined areas are suitable for potential programmatic elements.

Elements are split into four three categories: Transit Station, Town

Center Development, Mixed-Use Development, and Neighborhood and Open Space Development. Locations for categories can be seen in Figure 3.2.7.

Enhanced Transit Stop

Because of its visibility and location on South Broadway, the old site of Ralph Schomp BMW would be a highly suitable location for a shuttle terminal/enhanced bus stop. This location is the most likely to be used by commuters from neighboring cities. Those commuters coming from the south would be able to easily access the stop without having to wait at a light. It could serve as a logical terminus for a shuttle route that would take riders to and from Littleton Station in Downtown Littleton. The location would provide a direct turn off for commuters coming from the south.

Town Center Development

Based on high visibility and daily traffic flow, the intersection at South Broadway and Littleton Boulevard would be the most suitable for town center development. Town center development at the intersection would be well supported by the transit stop across South Broadway.

Mixed-Use Development

Mixed-use areas have been determined based on visibility along South Broadway and Littleton Boulevard. These streets experience large amounts of daily traffic and would be highly visible to daily commuters and passers-by.

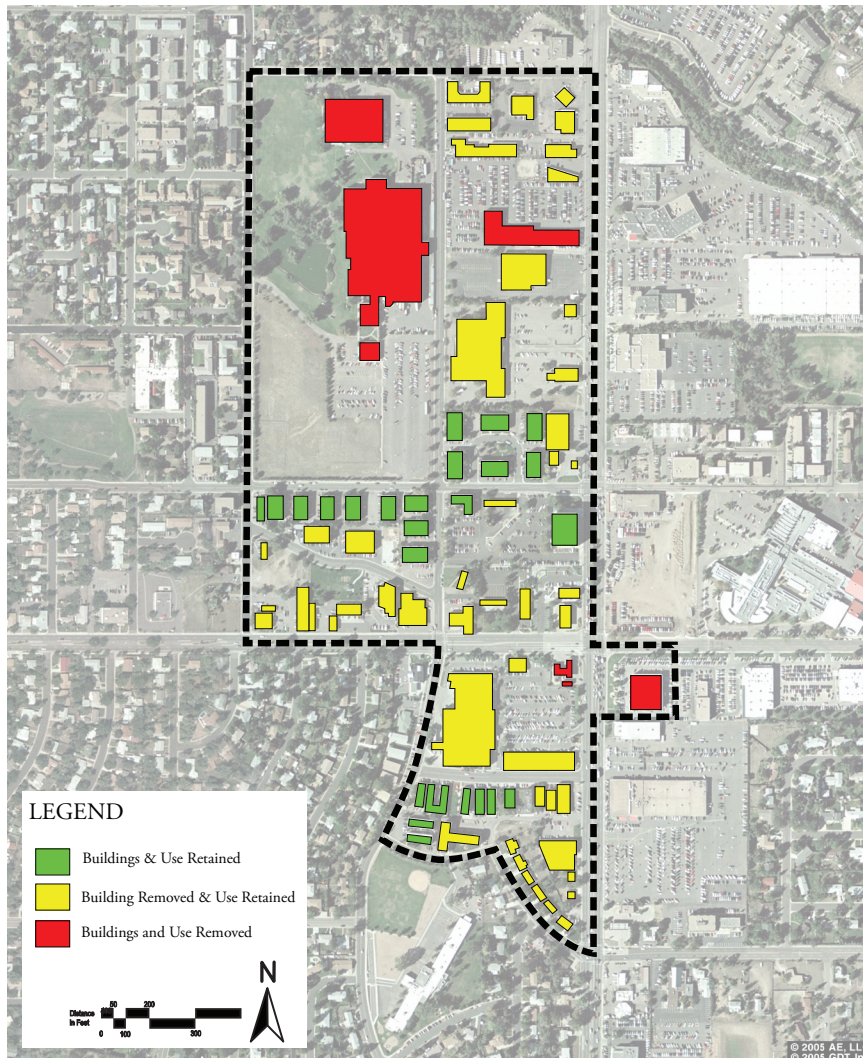


Figure 3.2.6: Buildings and Use Retained and Removed

Adapted by K. Burnham from Google Maps

Neighborhood and Open Space Development

Neighborhood and open space development has been located west and south of the town center and mixed-use development. The existing open space and pond area currently owned by Norgren could easily be incorporated into the design of a neighborhood park. The transition of a new, highly dense neighborhood into the surrounding neighborhoods would fit in with the existing context. Any new residential development would only enhance the feasibility of a shuttle route and transit stop and would help to support businesses along South Broadway and Littleton Boulevard.

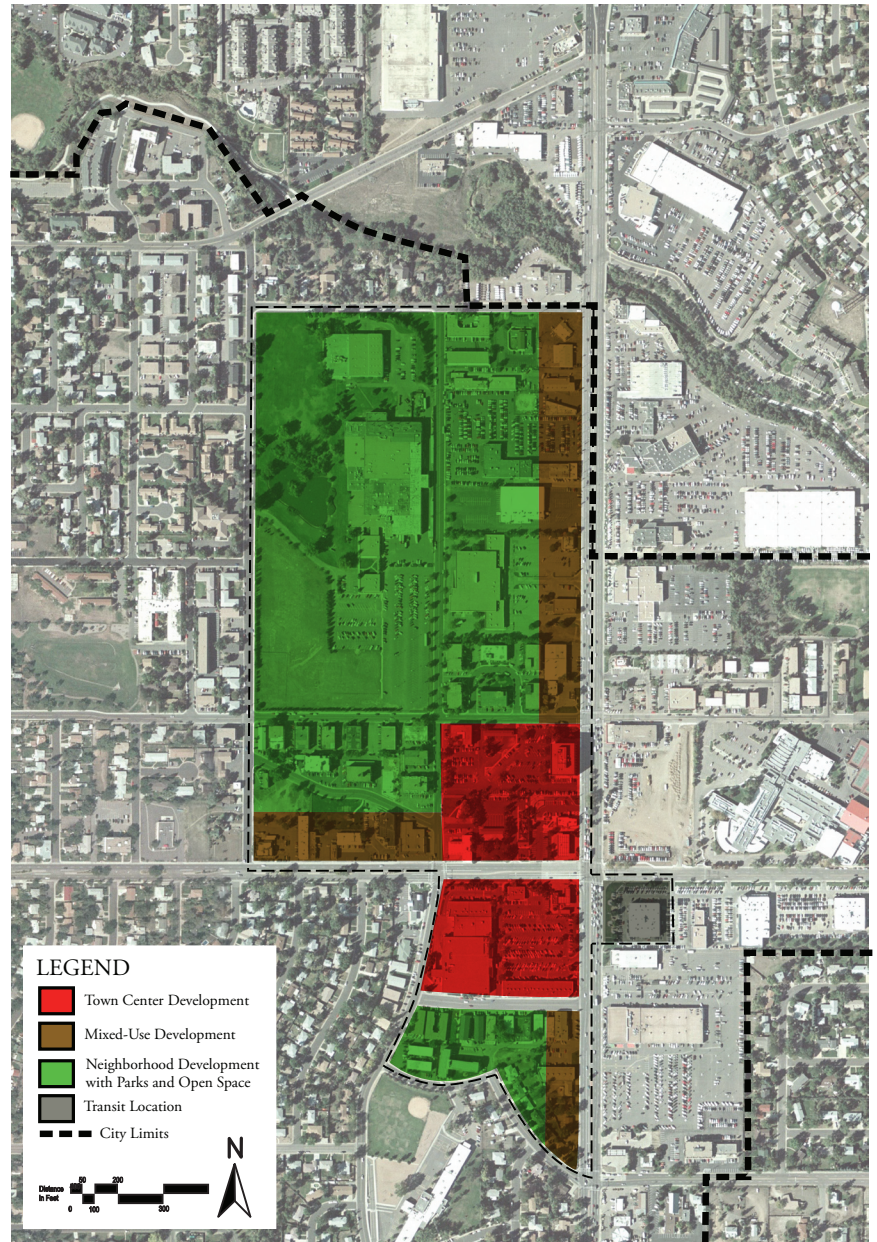


Figure 3.2.7: Suitable Locations for Proposed Site Elements

Adapted by K. Burnham from Google Maps



chapter 4:

programming, design, & form-based coding

PROGRAMMING, DESIGN, AND FORM-BASED CODING

The programming, design, and form-based coding are responses to the site inventory and analysis within the context of service as illustrated in Figure 4.1. The program establishes the goals and objectives for the design and the form-based code. The design and form-based coding work in tandem to achieve the goals and objectives of the program. Central to the program, the design, and the form-based coding is the concept of service.

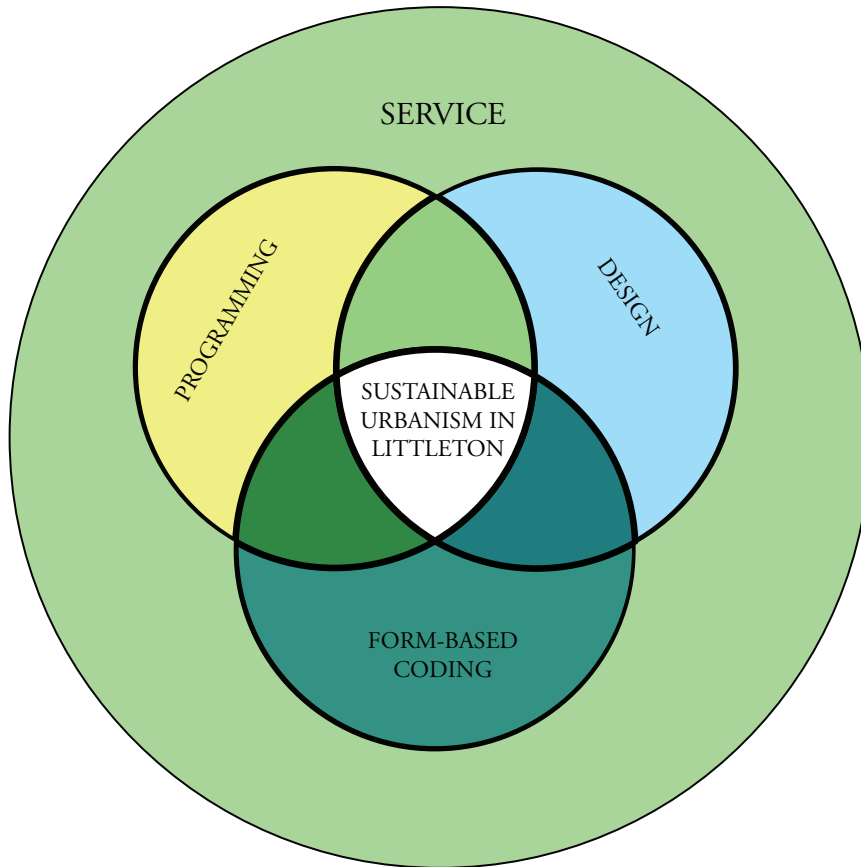


Figure 4.1: Process Diagram:
Programming, Design, and
Form-Based Coding
Created by K. Burnham



chapter 4.1:

programming

PROCESS OF PROGRAMMING

Site analysis determined the placement of potential programmatic elements, but in order for the program to be definable, service must be further divided into different types. Once clearly defined, service is then aligned to the five Sustainable Urbanist principles. Goals and objectives for each principle are created, with each objective matching with one or more of the types of service (see Figure 4.1.1). By breaking apart and clearly defining service, then aligning the types of service to the principles of Sustainable Urbanism, one can clearly see the correlation between the two and how service is achieved through Sustainable Urbanism. The program serves as a guide for the design of the site in Littleton.

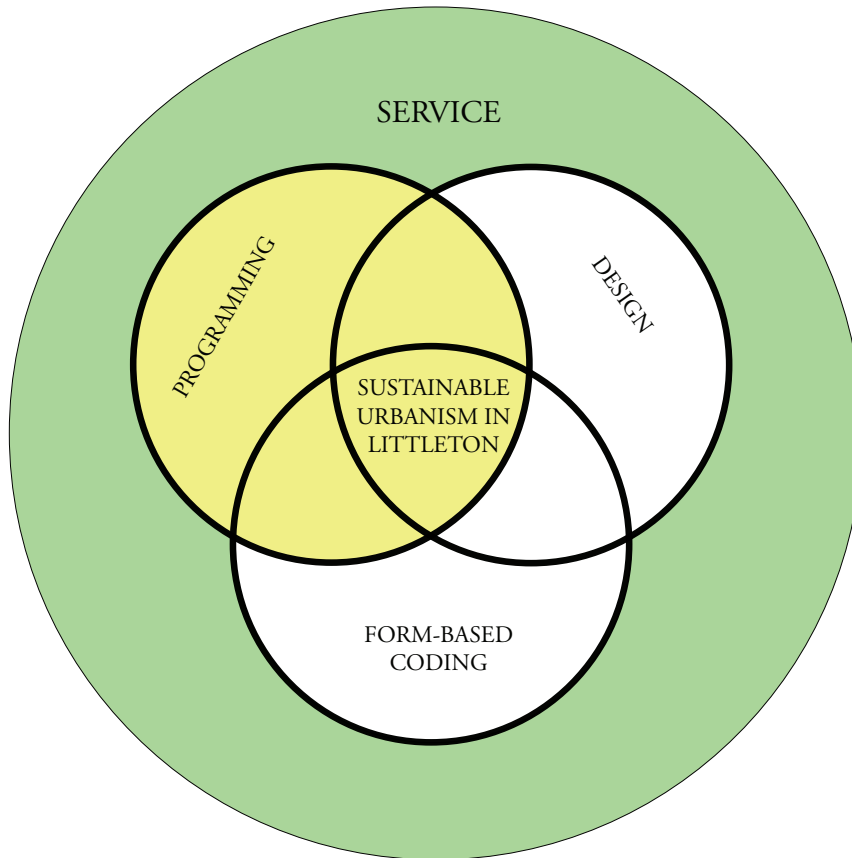


Figure 4.1.1: Process Diagram:
Programming
Created by K. Burnham

SERVICE FURTHER DEFINED

Service can be an idea or an action depending upon its context. As an idea, service addresses the needs of a community through policy or principle. As an action, service repairs, cleans, provides access to, or adjusts the individual pieces of a community.

- Service is broken apart in five types:
- Community Service
 - Psychological Service
 - Social Service
 - Transit Service
 - Environmental Service

The Matrix of Service shown in Table 4.1.1 clearly defines the types of service and gives examples of each. Service brings members of a community together through enhanced connections to their neighbors, their neighborhood, and their city.

Type of Service	Code	Idea or Action	In Context	Examples
Community Service	CS	Both	Individual or collective work or policy that positively impacts the overall community	Students organize a food drive for the homeless
				A policy that allows first time homebuyers to purchase a home
Psychological Service	PS	Both	Providing relaxation and mental relief from the stresses of everyday life	A person takes a walk on their lunch break
				a child playing reminds a person of their childhood
Social Service	SS	Both	Promotes interaction between people or improves the condition of the disadvantaged	A neighbor helps someone move
				A policy which provides housing at a reduced rent
Transit Service	TS	Both	Providing multiple ways of getting from place to place	A direct bus route which provides access to employment
				A city policy that allows bicycle lanes along roads
Environmental Service	ES	Both	Ways in which people affect the environment or the environment affects people to improve the quality of life within the community	A community garden that brings people together
				a stormwater management policy that reduces runoff from impervious surfaces

Table 4.1.1: Matrix of Service
Created by K. Burnham

SUSTAINABLE URBANISM PROGRAMMED

Service can be achieved through Sustainable Urbanism. The five principles of Sustainable Urbanism address different ways in which urban development can achieve sustainability. The Program Matrices (Table 4.1.2 through Table 4.1.6) break down the principles of Sustainable Urbanism and creates specific programmatic goals and objectives for each. Each objective aligns to one or more type of service. The types of service are shown according to their code.

Sustainable Urbanist Principle	Goal	Objective	How Objective Achieves Service				
			CS	PS	SS	TS	ES
Defined Center and Edge	promote walkability	integrate the street network	●	●	●	●	
		form-based code for streetscape		●	●		●
		integrate the network of trails and open space	●	●	●	●	●
		provide streetscape amenities such as sidewalks, shade trees and shade structures		●	●	●	●
		locate public open spaces within at most a quarter mile (less than a 5 minute walk) of all residences	●	●	●	●	●
		decrease design speed on streets for automobiles		●	●	●	
	diversity of building types	form-based code for architectural form and building placement		●	●		●
	diversity of uses	mix land uses and housing types	●		●	●	
	people feel welcome to congregate	shade, comfort amenities, seating	●	●	●	●	●
		create destinations such as playgrounds, squares, and plazas	●	●	●	●	●

Table 4.1.2: Defined Center and Edge Program Matrix
Created by K. Burnham

			How Objective Achieves Service				
Sustainable Urbanist Principle	Goal	Objective	CS	PS	SS	TS	ES
Compactness	increase density	integrate a mixture of land uses and building types	●		●	●	
		form-based code for architectural form and building placement		●	●		●
		site density set at a minimum average of 7 to 8 units per acre	●		●		●
		decrease lot size			●		●

Table 4.1.3: Compactness Program Matrix
Created by K. Burnham

			How Objective Achieves Service				
Sustainable Urbanist Principle	Goal	Objective	CS	PS	SS	TS	ES
Completeness	decrease need for automobile trips	cluster destinations and developed land uses at a pedestrian scale	●	●	●	●	
		provide a transit stop within a walkable distance of residences and commercial areas		●		●	
		integrate the street network	●	●	●	●	
	promote neighborhood retail	locate a corner store along a major local road at the busiest entry point of the neighborhood		●	●	●	
		create a convenience center within walking distance of neighborhood and along busy corridor		●	●	●	
		form-based code for architectural form and building placement		●	●		
		create a neighborhood center within walking distance and along a busy corridor		●	●	●	
	encourage interaction between people	provide "third places" close to residences	●	●	●	●	
		locate "third places" along a pedestrian corridor or near highly visible center of activity	●		●	●	
		utilization of form-based code to unify character		●			

Table 4.1.4: Completeness Program Matrix
Created by K. Burnham

Sustainable Urbanist Principle	Goal	Objective	How Objective Achieves Service				
			CS	PS	SS	TS	ES
Connectedness	promote mass transit	develop a transit center near the center of activity	●		●	●	
		make transit stops visible from roadways and residences		●	●	●	
		increase density to support transit	●		●	●	
		provide for pedestrian comfort at and leading up to stops	●	●	●	●	●
		locate stops at regular intervals		●		●	
	decrease auto dependency	increase convenience of transit by locating near residences		●	●	●	
		increase bicycle lanes along major streets		●		●	
		increase mixed-uses	●	●	●	●	
		connect to regional bicycle and walking trails		●	●	●	●

Table 4.1.5: Connectedness Program Matrix
Created by K. Burnham

Sustainable Urbanist Principle	Goal	Objective	How Objective Achieves Service				
			CS	PS	SS	TS	ES
Biophilia	provide access to open space	locate open space within a three minute walk of every dwelling	●	●	●	●	●
		create a network of highly visible open spaces connected by trails	●	●	●	●	●
		bound opens space on two sides with public rights-of-way		●		●	●
		form-based code for open space and streetscape		●			●
	reduce stormwater runoff	increase bioretention near areas with high amounts of impervious pavement	●	●			●
	involve people in the outdoors	increase signage near bioretention		●			●
		form-based code for open space and streetscape		●			●
		create visible and accessible community garden areas	●	●	●		●

Table 4.1.6: Biophilia Program Matrix
Created by K. Burnham

SUSTAINABLE URBANISM THROUGH SERVICE

Figure 4.1.2 diagrams the five types of service which are addressed through the principles of Sustainable Urbanism. Each type of service deals with either an individual or community need. When service is utilized through Sustainable Urbanist principles, the needs of the site and its residents are met.

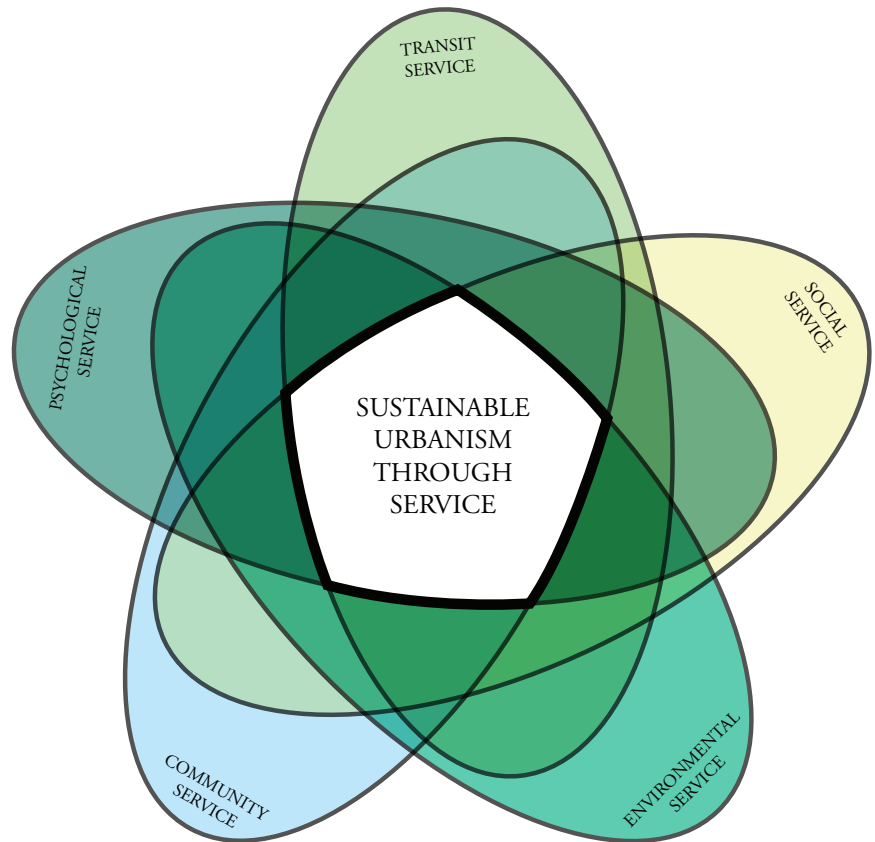


Figure 4.1.2: Sustainable Urbanism
through Service Diagram
Created by K. Burnham



Figure 4.1.3: Wordcloud of Key Concepts Used
Created by K. Burnham

VISION OF THE PLACE

The design of a new neighborhood in northeast Littleton emphasizes the city's uniqueness in the Denver Metro Area. It is distinctive, walkable, integrated within the urban fabric, and services people through transit, mixed-use, and recreational opportunities. Figure 4.1.3 illustrates the key concepts that are addressed through the design.

NARRATIVES OF SUSTAINABLE URBANISM THROUGH SERVICE

Service has multiple meanings, depending upon the context. The narratives below describe what service means to those who use the site on a daily basis. Since there is an necessary interaction between the site and the users, service is also described according to what it means for the site itself.

What Service Means for the Site (See Figure 4.1.4)

The buildings, infrastructure, and people help make an area which is environmentally and socially sustainable. Being an infill site, it lessens the impact of people on the environment. The site provides housing, business, and mobility for people without adding new roads and costly infrastructure. Bioswales along streets and pavement reduces stormwater runoff while providing aesthetically pleasing areas for people to look at and use. The site works within the existing urban

framework to create a place where people interact, socialize, live, and work within a connected and tightly knit neighborhood.

The site ties the community together through transit, trails, and open space. Regular bus service to the transit station offers

access to Downtown Littleton and surrounding communities. There is an interconnected system of open spaces which provide recreation and food production to residents. People enjoy using the integrated trail system to ride their bicycles and walk from place to place. Form- based code creates unity

within the site. The code allows only certain urban forms to be built. Everything fits within the framework created by the code. The neighborhood has high density and many buildings are mixed-use, giving people the opportunity to live, work, entertain themselves, exercise, shop, and meet their daily



Figure 4.1.4: What Service Means to the Site
Created by K. Burnham

needs within a reasonable walking distance. As a result, the site is unique and integrated with its surroundings.

What Service Means to a Local Business Owner (Figure 4.1.5)

I feel lucky to own my store in northeast Littleton. My store is located at the corner of Littleton Boulevard and Broadway making it a highly visible place that is well travelled by pedestrians,

automobiles and buses. I am able to supply a multitude of customers without much advertising because of my location. Many of my customers stop in when they are walking home from the bus terminal after work. I feel like a part of the community because I serve the local neighborhoods.



Figure 4.1.5: What Service Means to the Local Business Owner
Created by K. Burnham

I am devoted to being a local business owner. Living in Littleton myself, I feel a sense of duty to contribute back to the community that supports me and my business. I donate my time to local organizations, not only because that makes me feel good about myself, but it also helps my business. I

enjoy seeing the familiar faces of my customers on a regular basis.

What Service Means to a Working Parent (Figure 4.1.6)

I love my family. When I'm not working, I enjoy having fun with my kids. Living in our neighborhood allows us to be an active family.

We often walk through the neighborhood, stopping to talk with our neighbors who are sitting on their front porches or stoops. We love taking picnics to the park and throwing the Frisbee to our dog. The family often rides our bikes along the trail system to Cornerstone Park to watch baseball games or play miniature golf.



Figure 4.1.6: What Service Means to a Working Parent
Created by K. Burnham

We very rarely drive once we are home to do our shopping. Everything is located within a reasonable walking distance of our home. It almost makes no sense to drive because it takes almost as long to do that as it does to walk. Being so close to everything helps me get exercise doing everyday things like shopping.

When I go to work, it is comforting to know that our neighborhood is so well connected to other areas of the Metro Area. I work in Englewood, but I do not have to drive. I just catch the shuttle to Littleton Station and I am at work in less than 30 minutes. I use this time to catch up on my reading during my commute because I

don't have to worry about traffic or finding a place to park my car. If there is an emergency with my children, I can easily make it home to them. I cannot imagine living in an area where I needed to drive everywhere.



Figure 4.1.7: What Service Means to an Elementary School Aged Child
Created by K. Burnham

What Service Means to an Elementary School Aged Child (Figure 4.1.7)

I live in Littleton with my family. I love it! I get to walk to school now because I'm old enough. We don't live that far from my school, so mom tells me that I can walk or ride my bike. The streets have a special place for me to ride where I'm safe from cars. When I'm at school, we sometimes get to pick plants from the community garden nearby. We get to learn how to grow food and what it takes for the land to produce it. After school, I get to play with all of my friends who live close by. We walk home together and play in the playground near my house. My mom says that it's okay to play in the park as long as she can see me from our porch. We take walks to the park so I can play. Sometimes on the weekends, we get to take the bus to the light rail station and go downtown to visit the museums and watch basketball games. I love where we live. There is so much fun stuff to do all the time.



chapter 4.2:

design

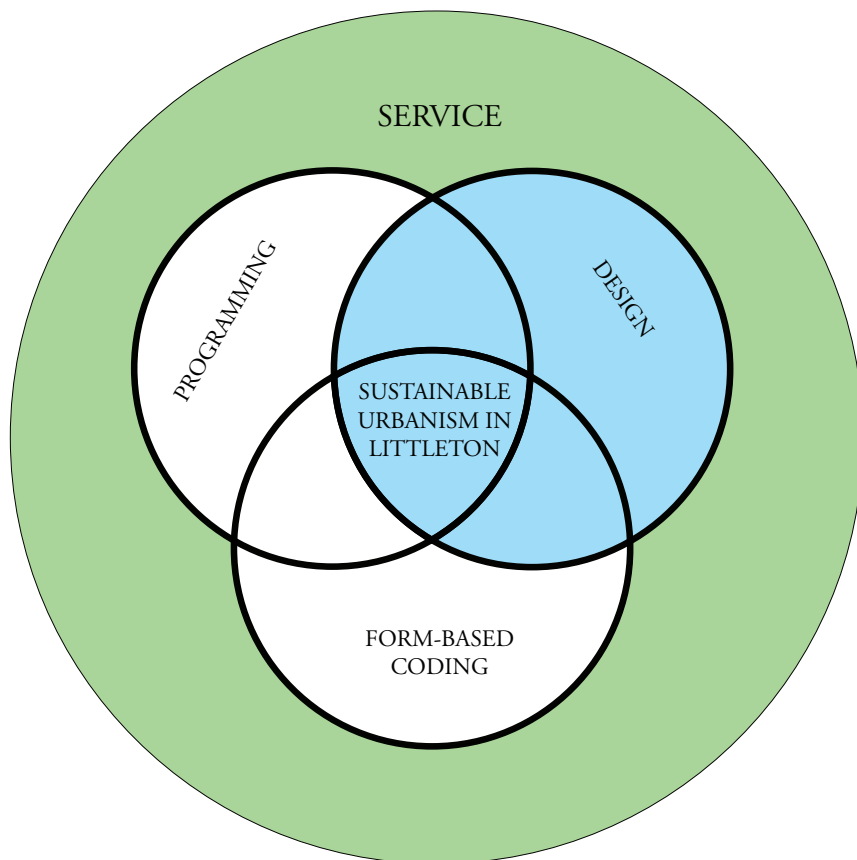


Figure 4.2.1: Process Diagram:
Design
Created by K. Burnham

PROCESS OF DESIGN

The design of the site in northeast Littleton is a response to the current research on sustainable urban design, the existing site conditions, and the analysis within the context of service as shown in Figure 4.2.1. Creating an area which services community needs takes into account the aforementioned items. Sustainable Urbanist principles are utilized in the design because they use time tested ways to create neighborhoods that can sustain themselves over time. Service gives the communities a reason to sustain themselves. By designing with Sustainable Urbanist principles using service as the driving force, a community becomes truly sustainable.

ILLUSTRATIVE PLAN

The illustrative plan is the graphic depiction of the design for northeast Littleton. The plan is shown in Figure 4.2.2

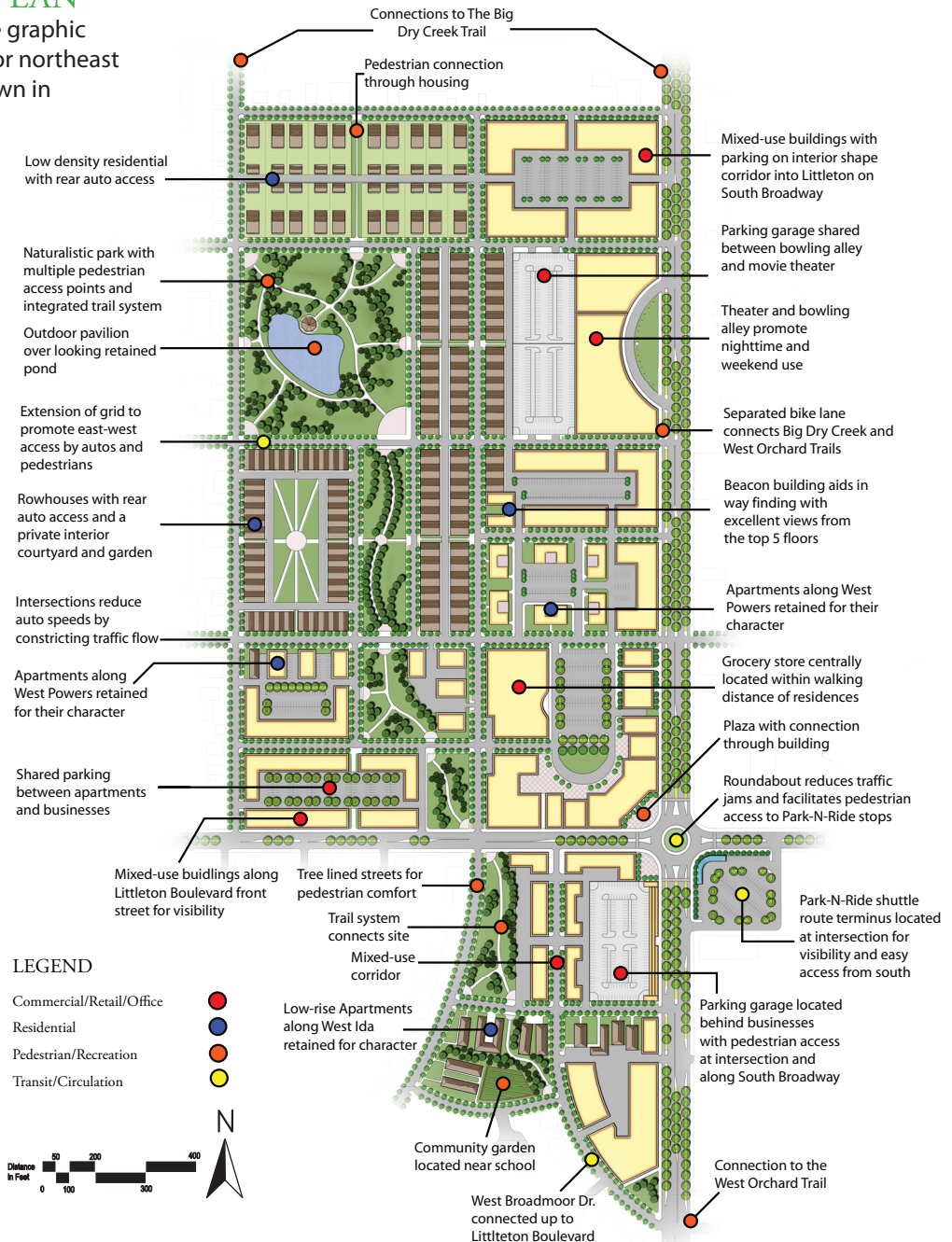


Figure 4.2.2: Illustrative Plan
Created by K. Burnham

SUSTAINABLE URBANISM IN LITTLETON, COLORADO

Defined Center and Edge

Service is achieved through the encouragement of walkability. There are distinct locations for people to walk. People can walk for pleasure, exercise, or to run errands

because of the diversity of uses and building types contained within and surrounding the site. Children can walk to school. Families can walk to the grocery store. People can walk to the movies or dine in a local restaurant.

Walkability is achieved in many ways through the design. Streets are lined with planting strips, creating a buffer between pedestrians and

automobiles. As Figure 4.2.3 shows, sidewalks are lines with trees, creating shade and comfort for the walker. Block sizes are all less than 300 feet, creating multiple ways for people to easily access all parts of the site.

Streets are also designed with the pedestrian in mind. Side streets are narrow, forcing automobiles to slow down and pay attention.



Figure 4.2.3: Perspective Illustrating Walkability Along Bannock
Created by K. Burnham

Destinations are strategically placed, with parking located behind buildings or along streets. By locating parking behind structures, it emphasizes walkability in the front.

The grid is connected across the entire site, creating direct routes to destinations (see Figure 4.2.4). Parks are connected by a trail system throughout the entire site.

The roundabout at the intersection of Littleton Boulevard and South Broadway reduces traffic congestion while promoting walkability across South Broadway from the west (see Figure 4.2.5). The intersection is the first major intersection in the city limits and advertises Littleton's uniqueness. Pedestrians feel safe crossing because crosswalks are set 50 feet back from the intersection and clearly delineated with differing material.

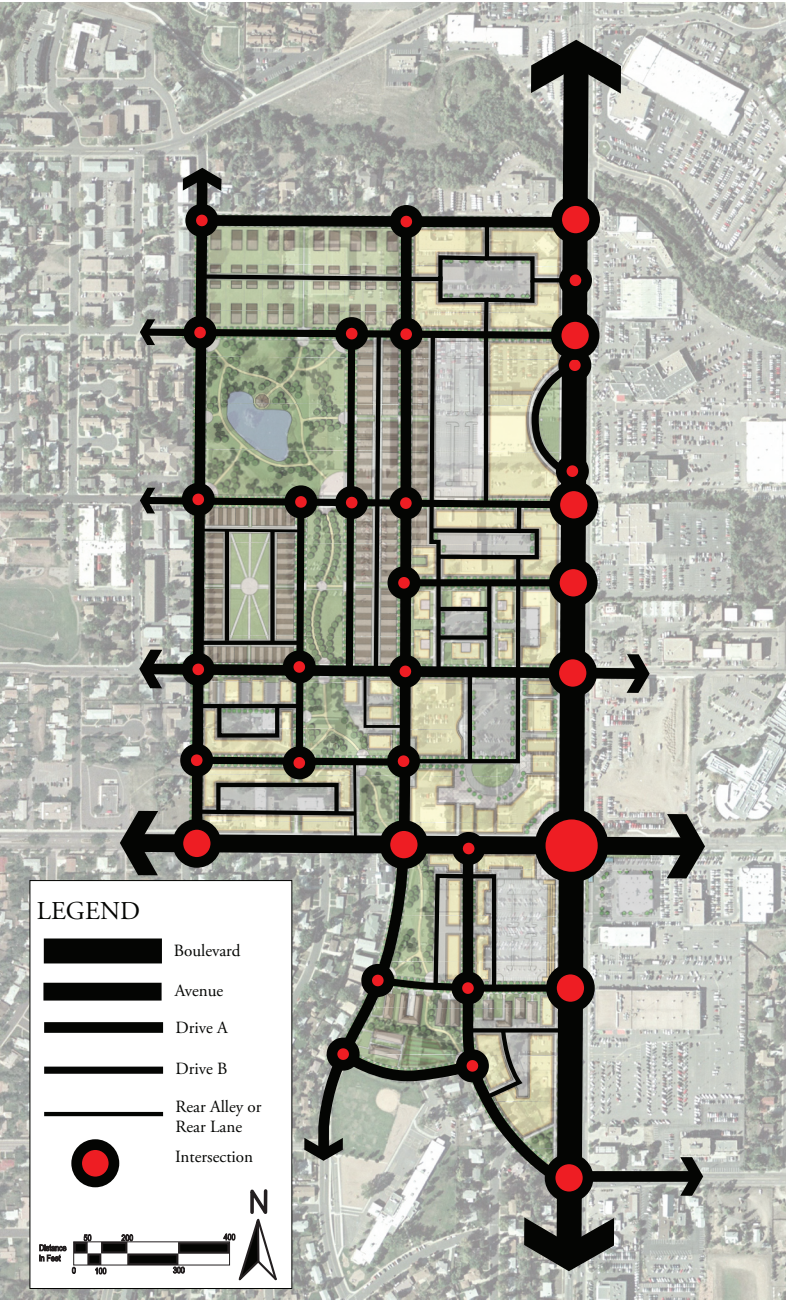


Figure 4.2.4: Grid Connection and Street Layout
Adapted by K. Burnham from Google Maps

Compactness

Service is accomplished through the increased density within the site. The design increases the mixed-use and commercial density along South Broadway and Littleton Boulevard, with the most intense use occurring at the intersection of the two. Buildings are placed directly adjacent to streets, with many structures sharing parking.



Figure 4.2.5: Roundabout at Littleton Boulevard and South Broadway

Created by K. Burnham

The design increases the overall residential density of the site. Residential density is illustrated in Table 4.2.1 and Figure 4.2.6. Density was calculated for areas with residential uses and extrapolated to the entire site for a total of 10.62 dwelling unit per acre. This is well above the least 7-8 dwelling units that Sustainable Urbanism requires. The site's increased residential density supports mass transit and local businesses.

Location	Acres	Dwelling Units	Units per Acre
1	3.4	137.0	40.3
2	2.4	154.0	64.2
3	2.4	80.0	33.3
4	4.8	40.0	8.3
5	6.7	20.0	3.0
6	5.2	144.0	27.7
7	3.9	36.0	9.2
8	2.3	24.0	10.4
9	2.4	47.0	19.6
10	2.7	180.0	66.7
11	1.6	20.0	12.5
12	2.5	105.0	42.0
13	1.6	75.0	46.9
Totals	41.9	1062.0	29.5

Total Approximate Site Acreage	100.0	Total Dwelling Units	1062.0
		Total Dwelling Units per Acre	10.62

Table 4.2.1 Residential Density Throughout the Site
Created by K. Burnham

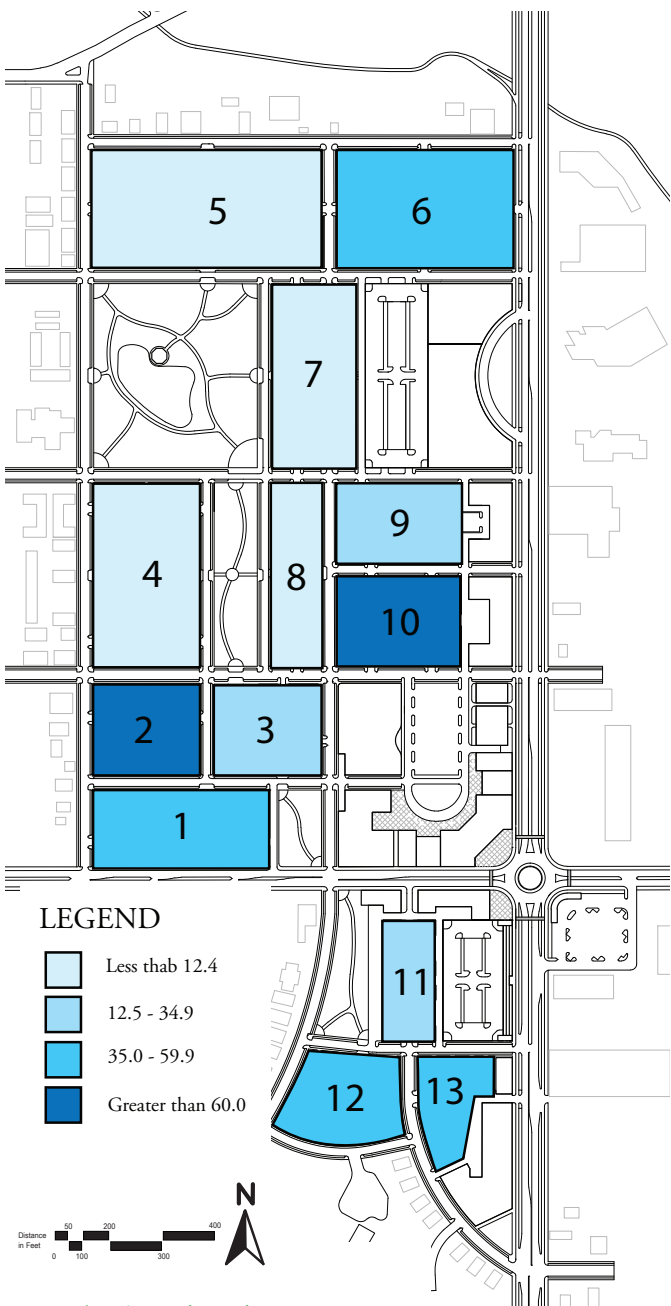


Figure 4.2.6 Residential Density Throughout the Site
Created by K. Burnham

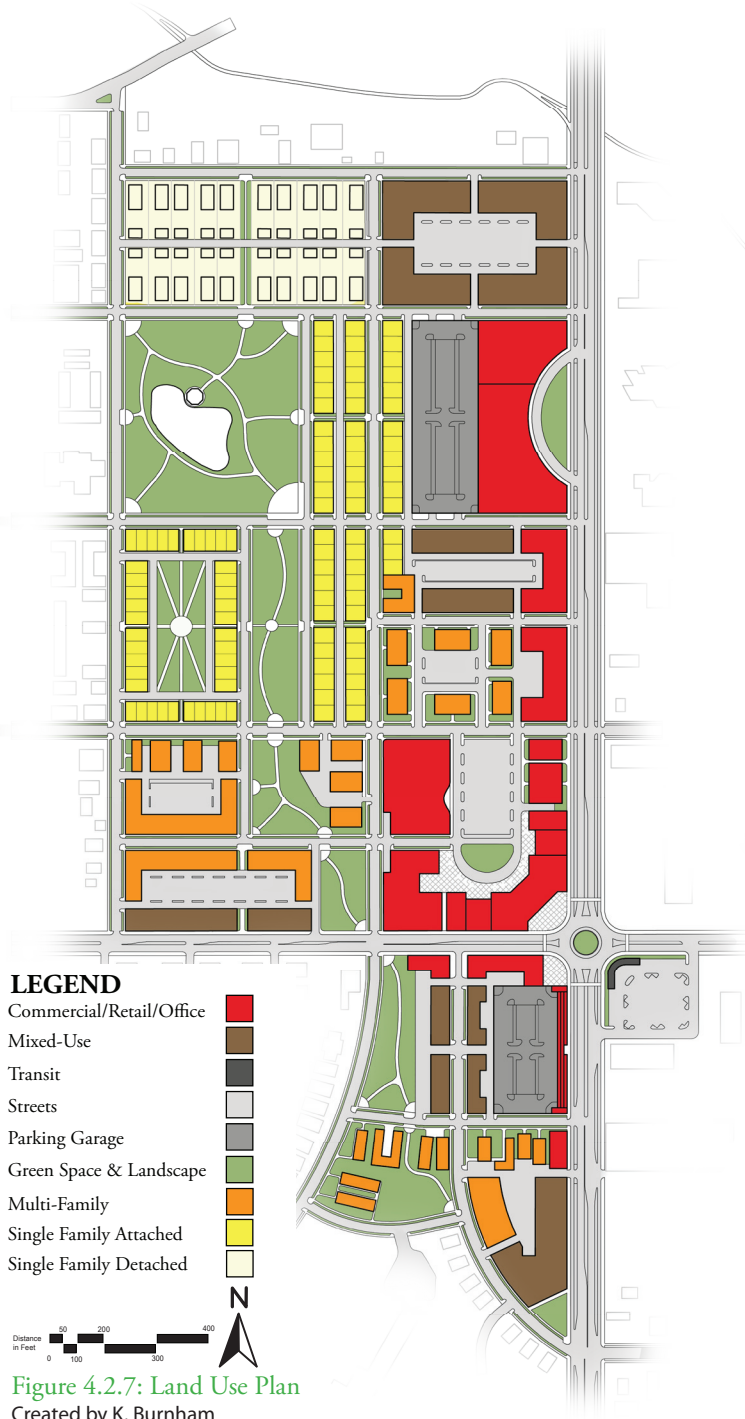


Figure 4.2.7: Land Use Plan
Created by K. Burnham

Completeness

The design emphasizes completeness through its multiple land uses (see Figure 4.2.7). Destinations are clustered together, reducing the need for an automobile once on site. Many of the site's amenities are within walking distance. At the intersection of Littleton Boulevard and South Broadway, one can easily access offices, retail, a grocery store, residences, mass transit and the trail system within a five-minute walk.

The streetscape and integrated trail system encourage interaction among people, thus achieving service. Plaza spaces near offices encourage people to congregate after work and during lunch hours. Sidewalks are wide enough for people to walk side by side without fear of being hit by a car because they are buffered by a parking lane and planting strip. There are many ways for people to interact with one another within the open space and trail system.

Connectedness

Connectedness in northeast Littleton achieves service. The site is designed to accommodate all modes of transport, with a decreased emphasis on the automobile. The Park-N-Ride east of the intersection (see Figure 4.2.8) at Littleton Boulevard and South Broadway and the shuttle service decreases the need for automobile usage along Littleton



Figure 4.2.8: Aerial Perspective of Shuttle Stop at Littleton Boulevard and South Broadway

Created by K. Burnham

Boulevard. Increased density of the site supports the shuttle stop at the intersection. Commuters from surrounding communities are able to use this stop to either catch the 0 RTD Line to Downtown Denver or catch the shuttle to Littleton Station in Downtown Littleton along the route shown in Figure 4.2.9.

Service is also achieved throughout the site by the grid-like pattern of the streets and the interconnected

trail system. The grid helps to orient people and aids in way finding. Trails are an integral part of the design, and are essential to achieving service through connectedness within the community. The Big Dry Creek Trail can be accessed at two different points just north of the site. The West Orchard Trail can also be accessed off of Broadway at the southern part of the site. The trail system provides access direct trail to the Platte River Trail to the west.

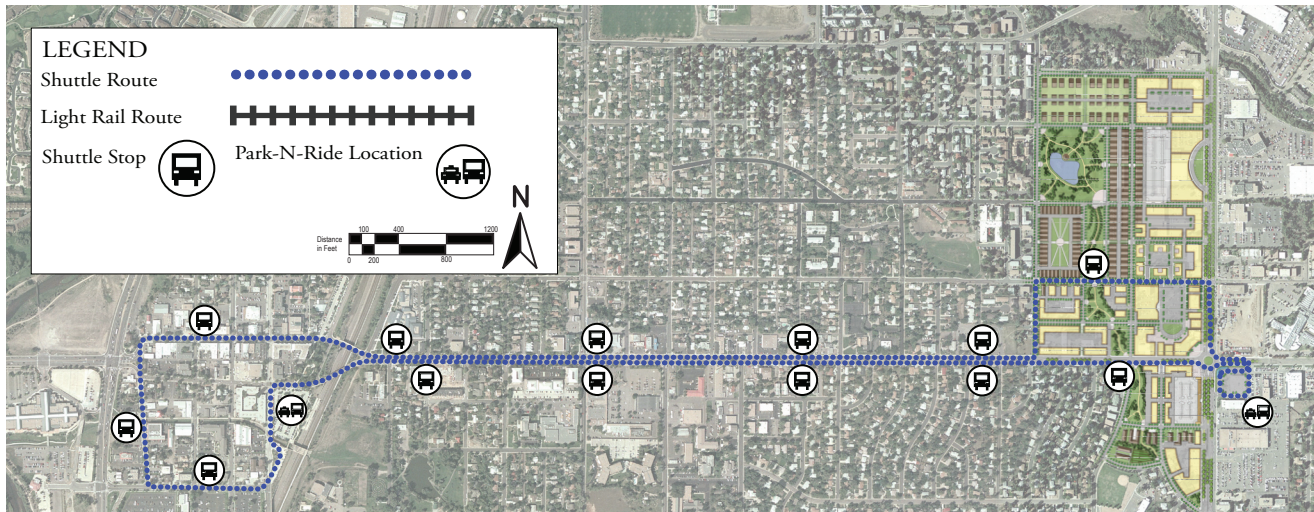


Figure 4.2.9: Diagram of Shuttle Route and Stops Along Littleton Boulevard

Adapted by K. Burnham from Google Maps

Biophilia

There is an ample amount of visible open space on the site in northeast Littleton. Each residence is within a three minute or less walk from some type of open space as outlined in the form-based coding for Littleton. Along South Broadway, a bicycle lane is separated from the drive lanes by a series of bioswales (see Figure 4.2.10) that reduce excess runoff from entering the Big Dry Creek. Smaller detention strips along side streets allow percolation of rainwater before being allowed access to the storm sewer. A naturalistic park with a pond provides an escape from the rigors of urban life. A community garden near East Elementary School allows students to become active in learning about what is required to produce food. The connected green spaces are shown in Figure 4.2.11.



Figure 4.2.10: Perspective of Bioswale Curb Cut Along Street

Created by K. Burnham

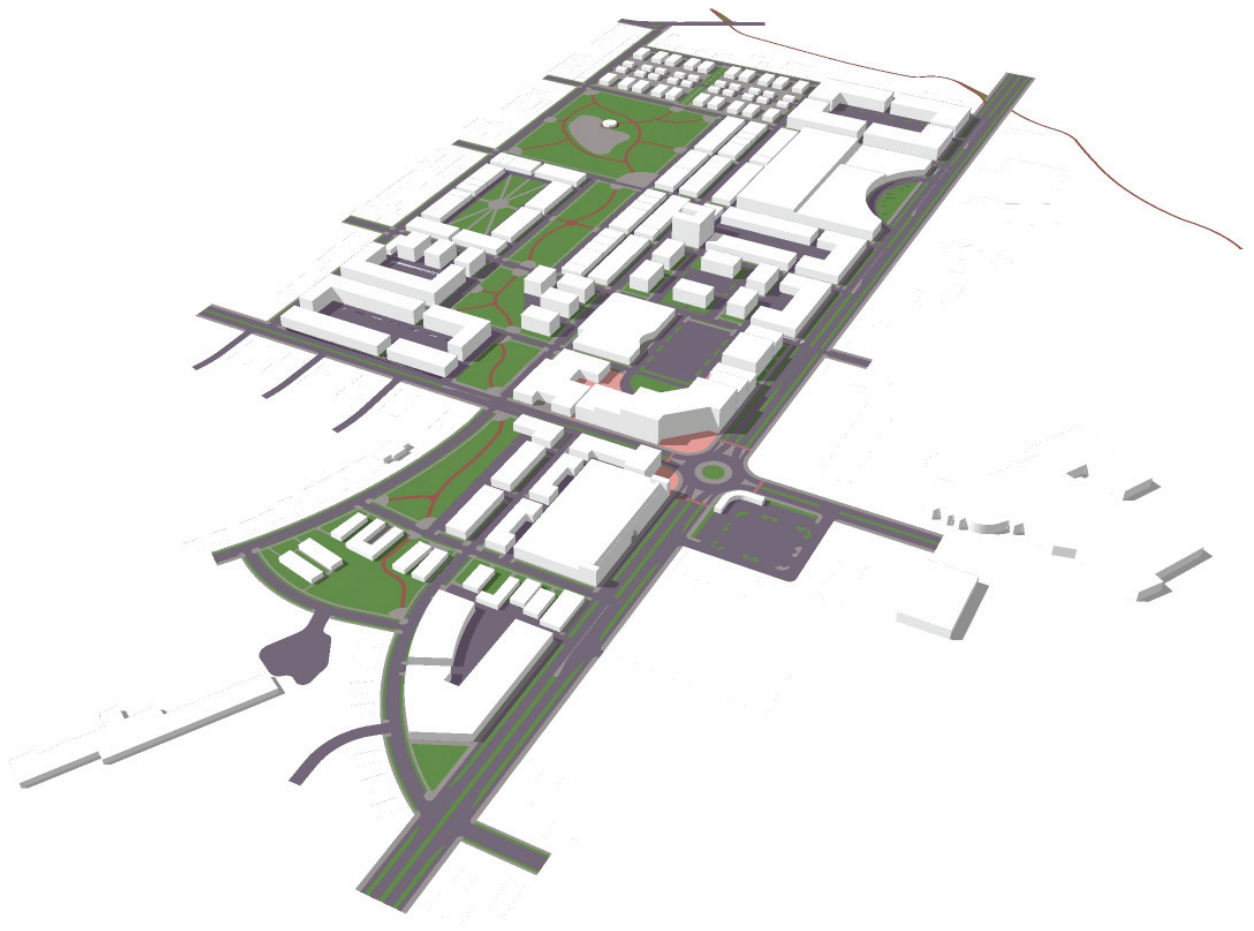


Figure 4.2.11: Perspective Diagram Showing Connected Open Spaces
Created by K. Burnham

LOCATIONS OF SERVICE

Service is achieved through Sustainable Urbanist design principles and can be mapped according to type. Each type of service is addressed through one or more principle, and mapping the locations shows how well each type is being achieved. Ideally, the entire design of the site would achieve at least one type of service. Figure 4.2.12 through 4.2.16 diagram the location of each type of service achieved through the design.

Community Service

Community service is achieved when some work or policy positively impacts the overall community. Schools play a vital role in this type of service. Schools service neighborhoods by educating students and providing a source of pride within the community. Local businesses and offices service the local economy and provide a diverse source of employment and shopping options for residents. Outdoor plazas and gathering areas allow people

chances to service their community with events like farmers markets and art fairs. For those who are unable to afford a home, the Littleton Housing Authority, located just west of the site off Bannock, services the community with below market rental housing and the ability to rehabilitate aging buildings within the community.

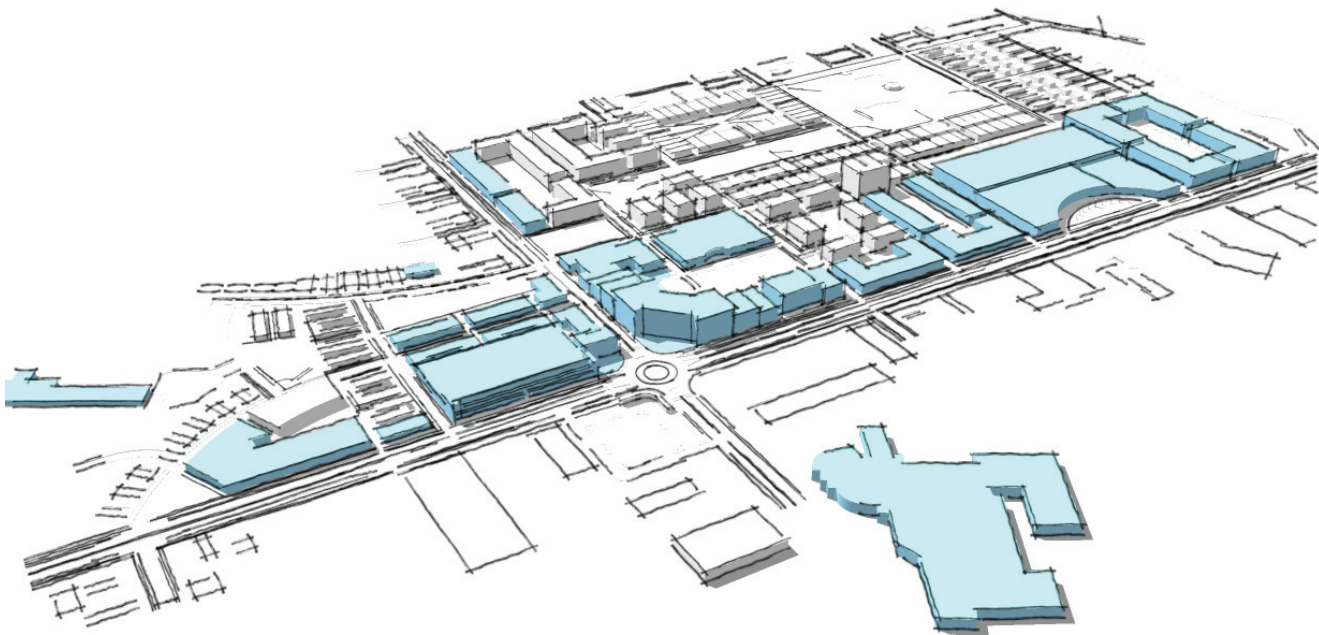


Figure 4.2.12: Community Service Location Diagram
Created by K. Burnham

Psychological Service

Psychological service provides a way to recover from the mental fatigue that comes from the stresses of everyday life. Areas for recreation, relaxation, and escape are vital to this type of service. A connected trail system provides access to regional outdoor recreation and parks. A community garden offers a way for people to grow their own food during the growing season. The grid makes way finding easy. Buildings used for entertainment, such as the theater and bowling alley provide

ways to escape and interact with others. Streets lined with sidewalks and street trees make walking more enjoyable. A roundabout at Broadway and Littleton Boulevard reduces traffic jams. Homes with front porches, such as with rowhouses, have direct views to the street and promote safety and security within the neighborhood.

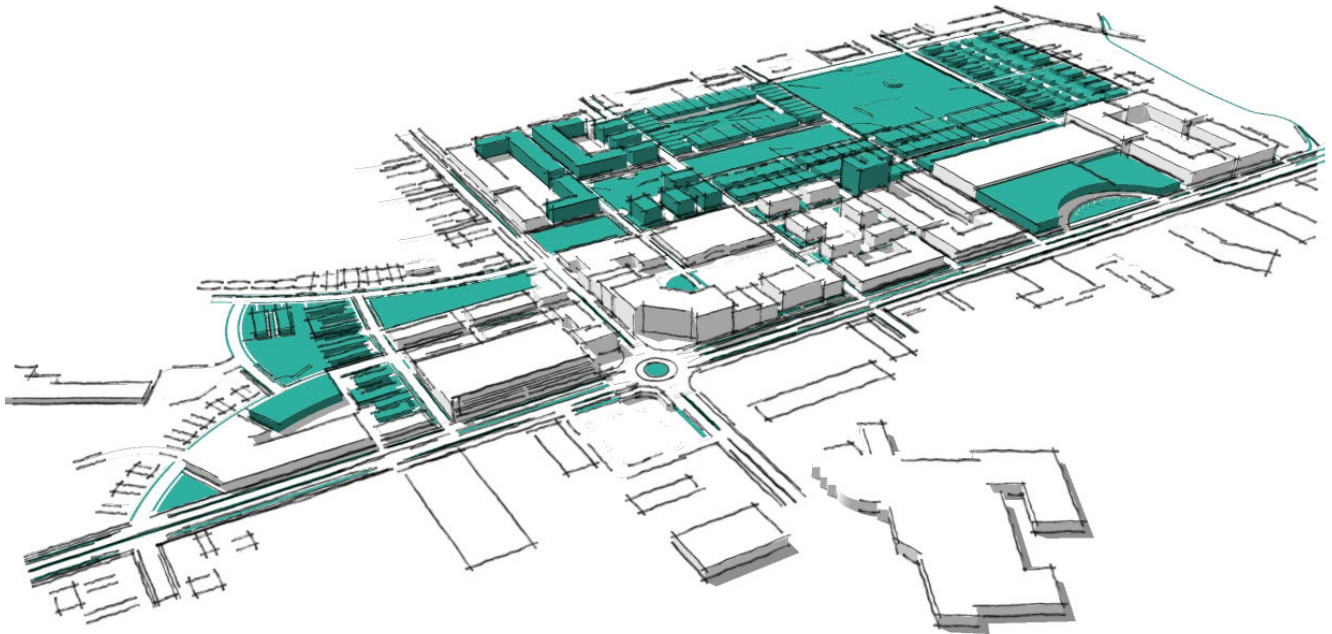


Figure 4.2.13: Psychological Service Location Diagram
Created by K. Burnham

Social Service

Social service promotes interaction between people and improves the condition of the disadvantaged. Anywhere people are encouraged to gather, such as plazas or park shelters, are essential to achieving social service. The parks and trail system allow people to recreate outdoors. Community gardens support neighborhood unity. The theater and bowling alley promote social interaction during evening hours. The grocery store is a beacon within a neighborhood where friends often run into one another.

Even though they are located offsite, the East Elementary and Littleton High School service a dual need for promoting interaction between people and helping the disadvantaged. The Littleton Housing Authority and their low income apartments service the community with affordable housing.

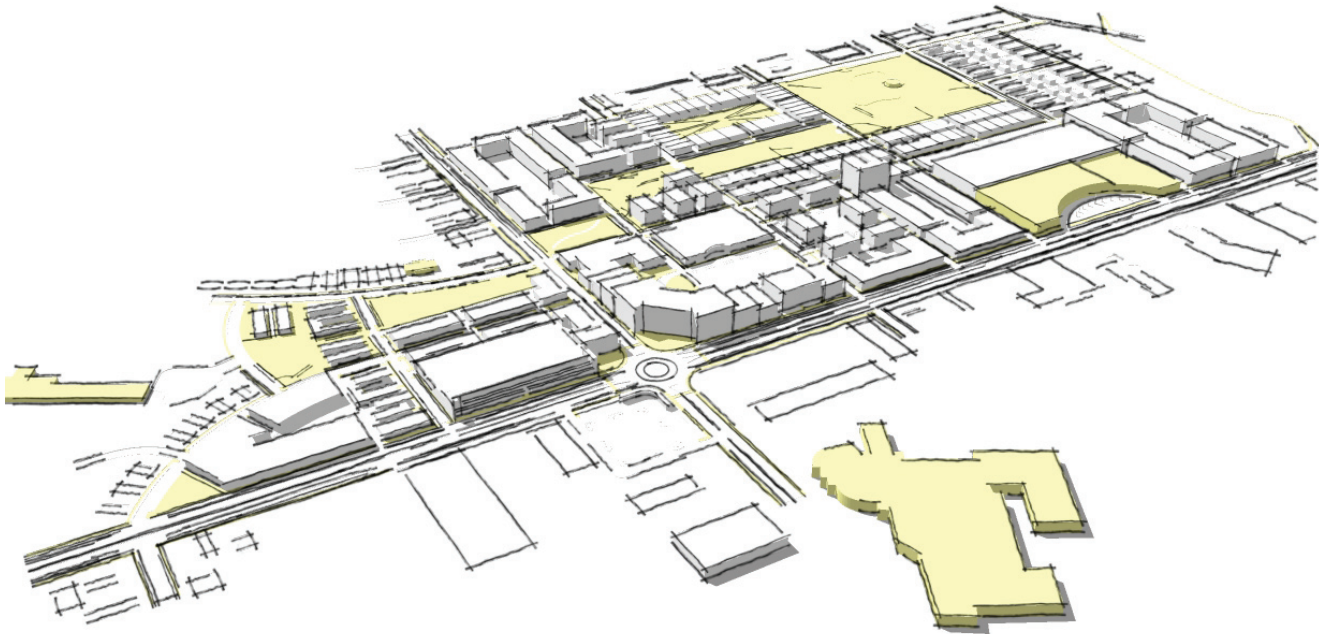


Figure 4.2.14: Social Service Location Diagram
Created by K. Burnham

Transit Service

Transit service provides multiple ways of getting from place to place within a community. Walkability is encouraged throughout the site with short blocks, streets lined with sidewalks and street trees, and an integrated trail system that connects existing off site trails together. Bicycles are separated from automobiles along South Broadway. A shuttle route is established to connect the neighborhood to Downtown Littleton and the Littleton Station light rail stop.

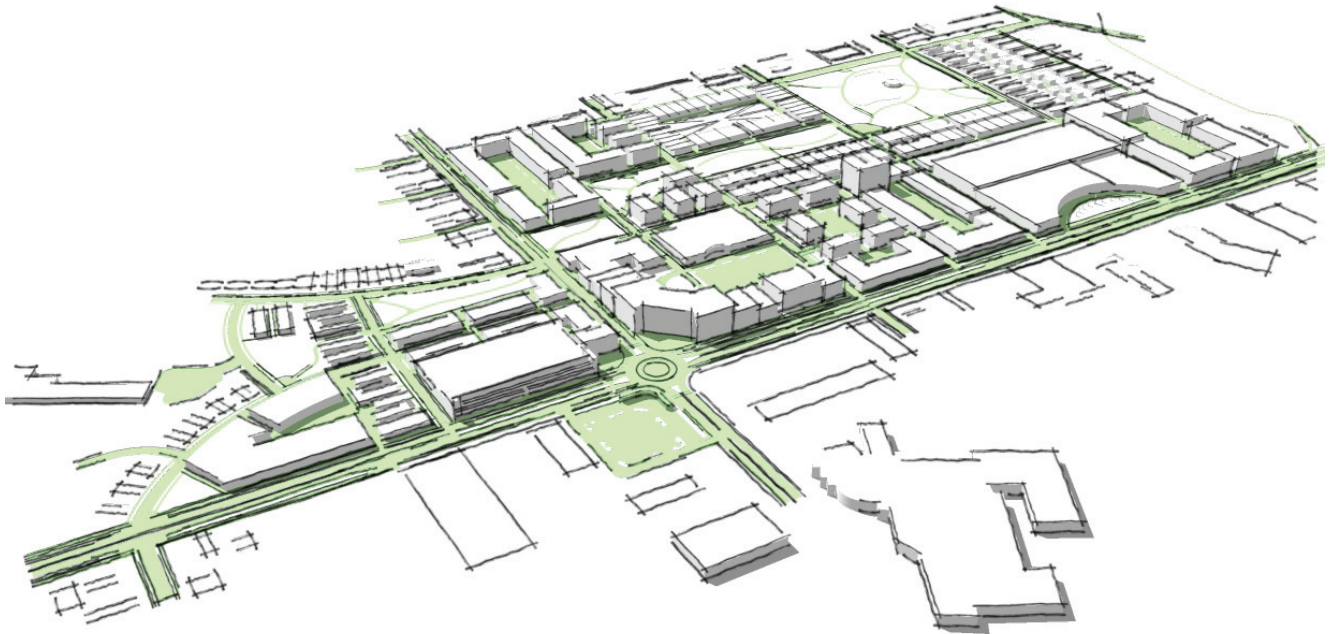


Figure 4.2.15: Transit Service Location Diagram
Created by K. Burnham

Environmental Service

Environmental service is the way which people affect the environment or the environment affects people to improve the quality of life within the community. The bioswales and detention strips along the streets reduce runoff to the Big Dry Creek and provide aesthetically pleasing buffers for pedestrians, bicycle riders and residences. The parks and pond provide gathering spots for the community and habitat for small animals and birds.

Community gardens produce food for the neighborhood. Parking garages service the community by allowing shared parking for businesses that decrease the amount of surface parking needed in the community.

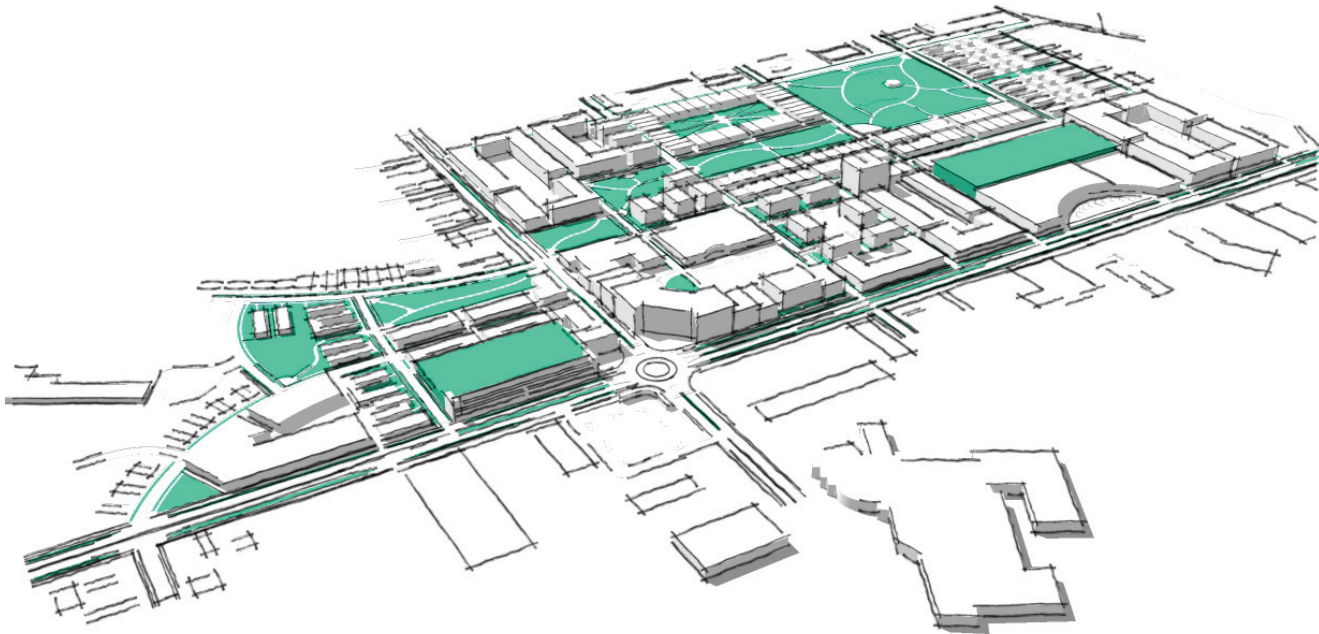


Figure 4.2.16: Environmental Service Location Diagram
Created by K. Burnham



chapter 4.3:

form-based coding

CODING FOR THE SITE IN LITTLETON

Form-based coding is utilized to unify the character of northeast Littleton and is utilized in the design. The code allows multiple land uses and is used to regulate the dimensions of streets and sidewalks, define types of open space, and control lot types within the community.

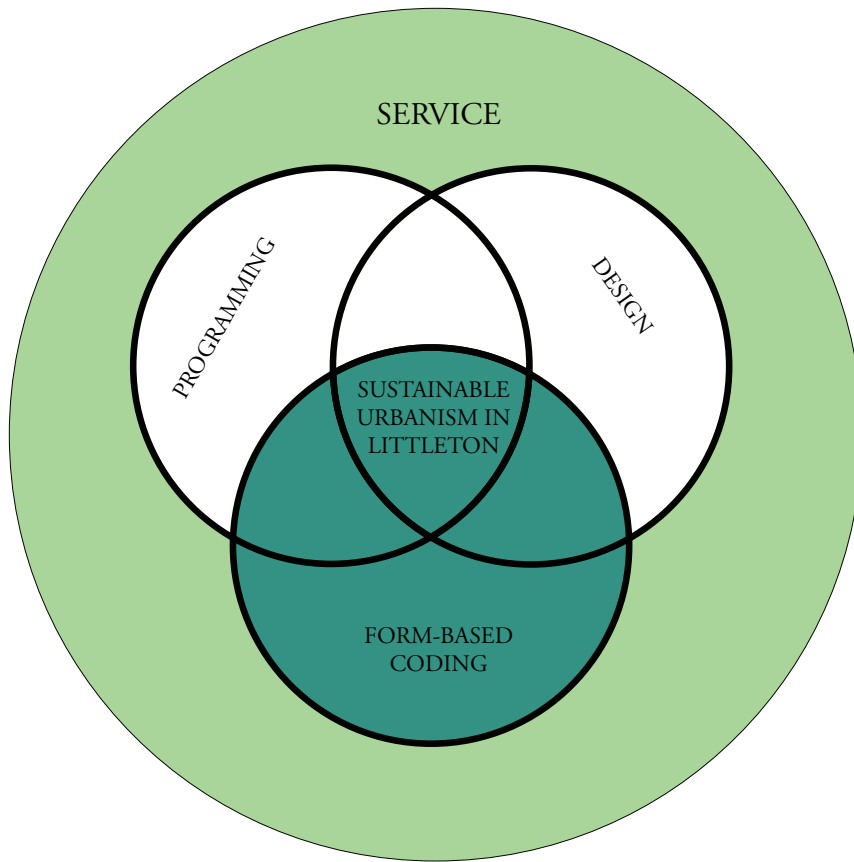


Figure 4.3.1: Process Diagram:
Form-Based Coding
Created by K. Burnham

A Transect-Based Code

(Adapted from the Sarasota County, Florida
Form-Based Code)

The transect acts as a guide for the establishment of the code for Littleton. It has been modified to fit with local conditions for the site. The site has been divided into four transect categories. These categories are similar to the original transect established in the SmartCode. The four categories for the site are: T5-Urban Center, T4-General Urban, T3-Edge Suburban, and T1-Preservation. Each transect zone is described below:

- T5-Urban Center: This transect zone is the most intensely occupied zone. Buildings tend to be larger and are often times attached to create a continuous building street façade. This transect zone is also located within walking distance of many residential areas. This zone is located along or near arterial streets.
- T4-General Urban: This zone has a mixture of uses and a wide variety of lot types. Buildings may be attached or detached and are typically separated from the street with a small street yard. This zone is located along or near arterial or collector streets.
- T3-Edge Suburban: This zone is reserved for homes that are similar in scale and character to the existing adjoining neighborhoods. This zone has is located generally along local streets.
- T1-Preservation: This zone consists of land that will not be developed for commercial or residential uses. It acts as a buffer for either recreational uses or environmental protection.

Regulating Plan

A regulating plan is established to show where each transect zone is located within the site in Littleton. The regulating plan is shown in Figure 4.3.2.

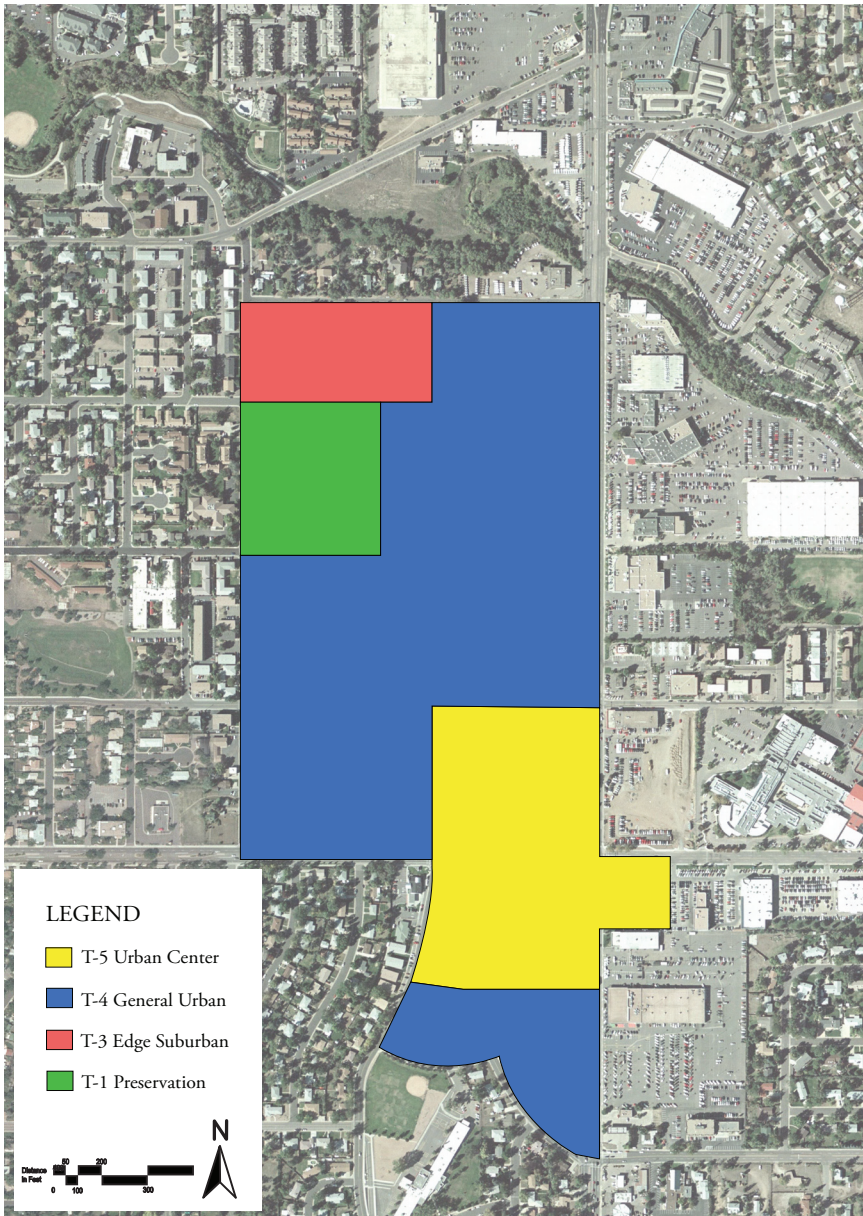


Figure 4.3.2: Regulating Plan

Adapted by K. Burnham from Google Maps

Streetscape Standards

(Adapted from the Sarasota County, Florida Form-Based Code)

Specific street types are allowed within each transect zone as shown in Table 4.3.1. Cross-sectional diagrams (Figures 4.3.3 to 4.3.8) are used to illustrate the typical street types used in northeast Littleton. Streets must follow the cross-sections illustrated for each street type.

The transect zones provide for a highly connected network of streets and which accommodate public transit. The network of streets extends into adjoining areas. Streets do not need to form a rectangular grid. They may be curved or bent and must adhere to existing topography and environmental conditions. Dead end streets are not permitted and all streets are dedicated for public use.

Alleys and lanes are provided for service and personal vehicles. The alley or lane entrances should generally align to provide ease of ingress for service vehicles. Internal deflections in the alley network are encouraged to prevent excessive or monotonous views of the rear of structures resulting in long stretches of alleys or lanes. All alley and lanes are publicly dedicated.

Street Type	Design Speed (mph)	Transect Zone			
		T5-Urban Center	T4-General Urban	T3-Edge Suburban	T1-Preservation
Boulevard	30-35	●	●		
Avenue	25-30	●	●		
Drive A	25-30	●	●		
Drive B	20-25		●	●	
Rear Alley	less than 20		●		
Rear Lane	less than 20		●	●	

Table 4.3.1: Allowable Street Types by Transect Zone
Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

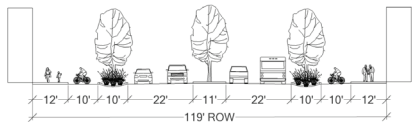


Figure 4.3.3: Boulevard
Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

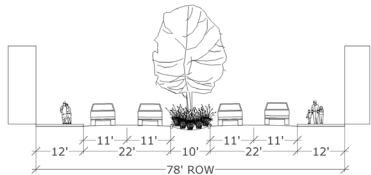


Figure 4.3.4: Avenue
Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

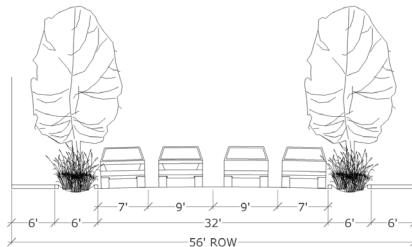


Figure 4.3.5: Drive A
Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

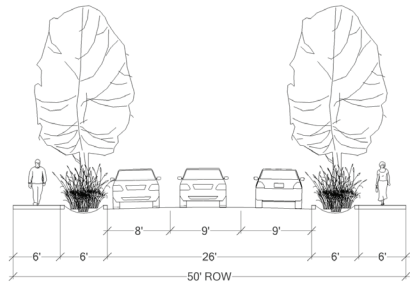


Figure 4.3.6: Drive B
Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

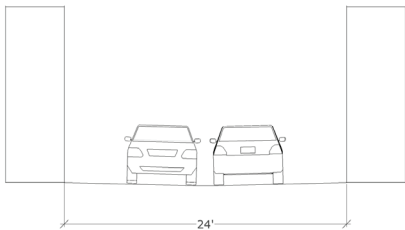


Figure 4.3.7: Rear Alley
Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

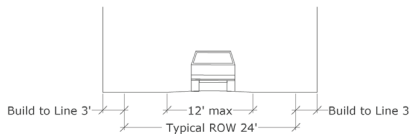


Figure 4.3.8: Rear Lane
Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

Table 4.3.2 shows all the standards as they apply to the street types that pass through each indicated transect zone.

Open Space Standards

(Adapted from the Sarasota County, Florida Form-Based Code)

Each transect zone must contain at least one type of open space. Open spaces may be one of the following types, which are allowable in various transect zones as indicated in Table 4.3.2.

The combined size of all open spaces located in the Town Center, General Urban, and Edge Suburban transect zones must be at least 5% of the total acreage of those zones, except where a comparable amount of civic space within 1/4-mile walking distance already exists. This 5% minimum is in addition to planting strips within street rights-of-way, open space provided on lots with private buildings, and open space in the Preservation transect zone.

Open space lots must be designed, landscaped, and furnished to be consistent with the character of the transect zone in which they are located. Street frontage requirements are provided in Table 4.3.2. One example of each type of open space is illustrated in Figures 4.3.9 through 4.3.14.

	Transect Zone		
Streetscape Standards	T5-Urban Center	T4-General Urban	T3-Edge Suburban
Street Edge:			
Type	raised curb	raised curb	raised curb or open swale
Corner Radius*	10'-15'	10'-20'	10'-25'
Corner Radius**	5' max	5' max	5' max
Street Trees			
Type	tree wells	tree wells or planting strip	planting strip
Width	4'-8' wells	4' min wells; 6'-12' strips	8' min strips
Tree Spacing	regular or clustered	regular	regular
Tree Density	single species per block	single species per block	alternating species allowed
Sidewalk			
Type	sidewalks required	sidewalks required	sidewalks required
Width	12' min; 16' min w/ wells	6' min; 10' min w/ wells	5' min
Rear Alley/Lane	alley is required	alley or lane is required	lane is required
*These radius apply to: swales (measured to edge of pavement) raised curbs if both on street parallel parking and curb extensions are provided raised curbs if on-street parking is not provided			
** This radius applies to raised curbs if on street parking is provided without curb extensions			

Table 4.3.2: Streetscape Standards by Transect Zone

Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

			Transect Zone			
Open Space Type	Must Front at Least:	Typical Lot Size (acres)	T5-Urban Center	T4-General Urban	T3-Edge Suburban	T1-Preservation
Green	2 Streets	0.5 to 5		●	●	
Square	3 Streets	0.5 to 2	●	●		
Plaza	1 Street	0.1 to 2	●	●		
Neighborhood Park	1 Street	0.5 to no max		●	●	●
Playground	0 Streets	0.1 to 1	●	●	●	●
Community Garden	0 Streets	0.1 to 1		●	●	●

Table 4.3.3: Open Space Standards by Transect Zone

Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

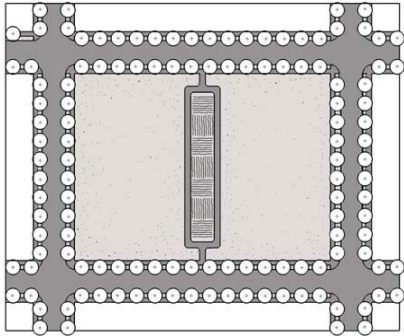


Figure 4.3.9: Community Garden
Image from Sarasota County, Florida
Form-Based Code, 2007

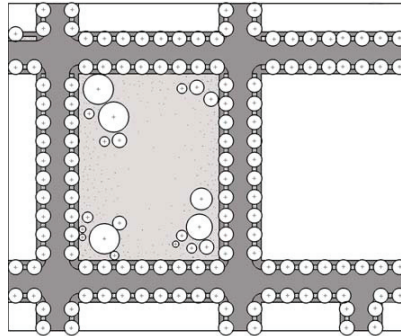


Figure 4.3.10: Green
Image from Sarasota County, Florida
Form-Based Code, 2007

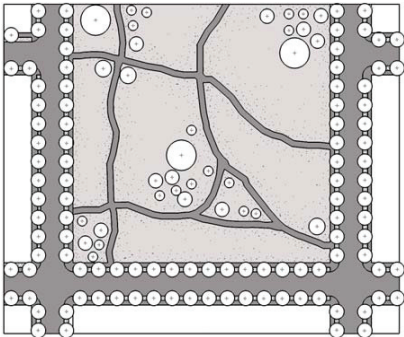


Figure 4.3.11: Neighborhood Park
Image Courtesy of Sarasota County, Florida
Form-Based Code, 2007

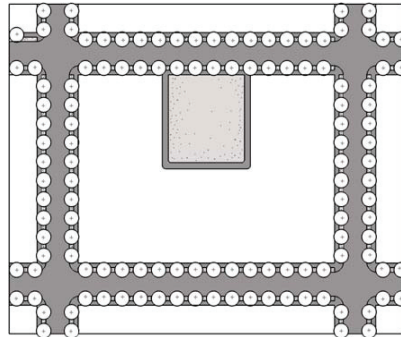


Figure 4.3.12: Playground
Image from Sarasota County, Florida
Form-Based Code, 2007

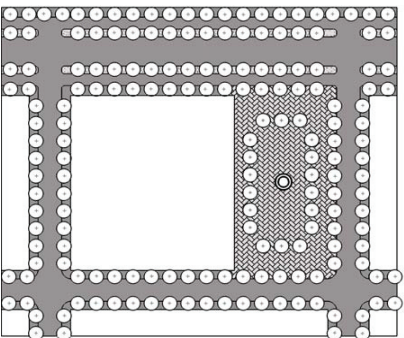


Figure 4.3.13: Plaza
Image from Sarasota County, Florida
Form-Based Code, 2007

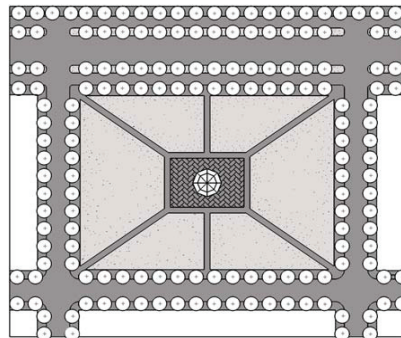
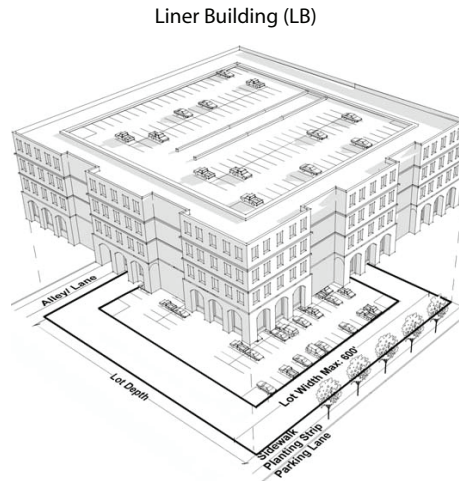


Figure 4.3.14: Square
Image from Sarasota County, Florida
Form-Based Code, 2007

The following are descriptions of the open space types for the code:

- Community Garden (Figure 4.3.9): A community garden is a grouping of garden plots available to nearby residents for small-scale cultivation.
- Green: A green is an open space consisting of lawn and informally arranged trees and shrubs, typically furnished with paths, benches, and open shelters. Greens are spatially defined by abutting streets.
- Neighborhood Park: A neighborhood park is a natural landscape consisting of open and wooded areas, typically furnished with paths, benches, and open shelters. Neighborhood parks are often irregularly shaped but may be linear in order to parallel creeks, canals, or other corridors.
- Playground: A playground is a fenced open space, typically interspersed within residential areas, which is designed and equipped for the recreation of children. Playgrounds may be freestanding or located within parks, greens, or school sites.
- Plaza: A plaza is a formal open space available for civic and commercial uses and spatially defined by building frontages. Landscaping in a plaza consists primarily of pavement; trees and shrubs are optional.

- Mixed-Use Building Lot (Figure 4.3.17): This lot accommodates multiple-story buildings. There are usually reserved for residential uses on the upper floor and commercial uses on all floors.
- Apartment Building Lot (Figure 4.3.18): This lot is designed to accommodate buildings with multiple dwellings. These dwellings may be beside or above one another.
- Courtyard Building Lot (Figure 4.3.19): A lot which accommodates multiple dwellings. These dwellings are arranged around a central garden or courtyard. The courtyard may be partially or fully open to the street.

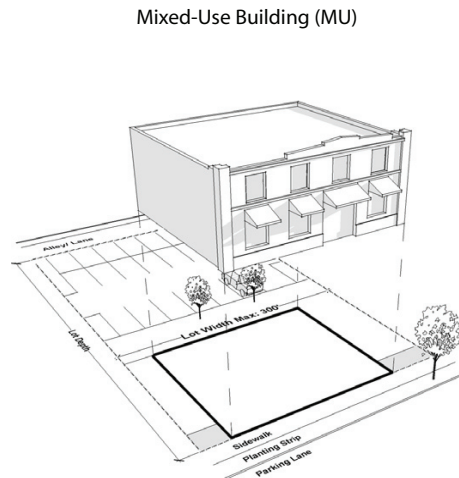


Character Examples:



Figure 4.3.16: Liner Building Lot

Images from Sarasota County, Florida Form-Based Code, 2007



Character Examples:

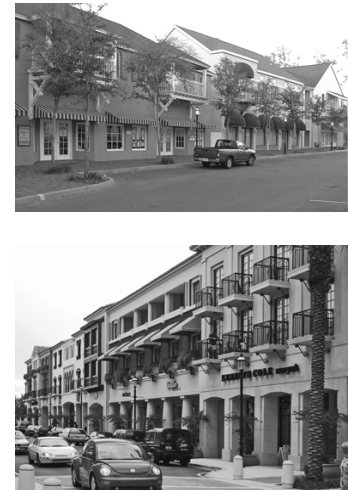
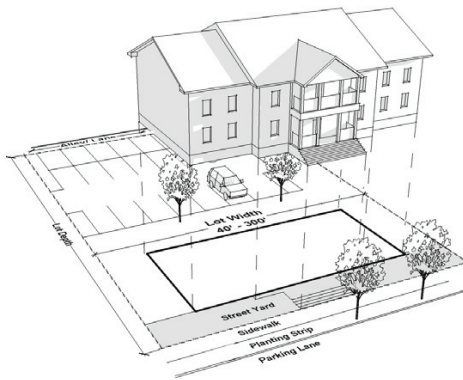


Figure 4.3.17: Mixed-Use Building Lot

Images from Sarasota County, Florida Form-Based Code, 2007

Apartment Building (AB)



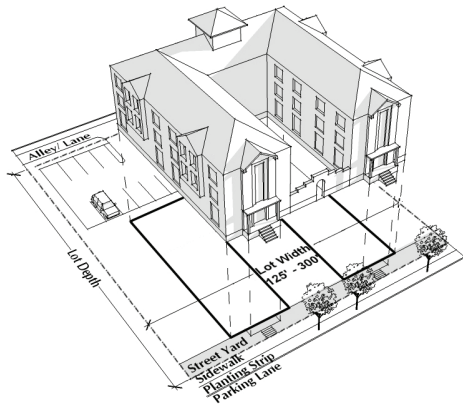
Character Examples:



Figure 4.3.18: Apartment Building Lot

Images from Sarasota County, Florida Form-Based Code, 2007

Courtyard Building (CB)



Character Examples:

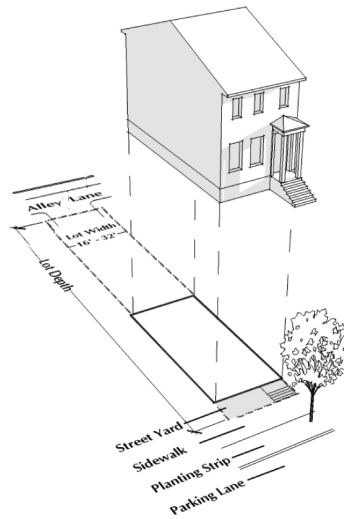


Figure 4.3.19: Courtyard Building Lot

Images from Sarasota County, Florida Form-Based Code, 2007

- Rowhouse Lot (Figure 4.3.20): A lot which accommodates buildings with common walls on either side of the lot. There are small private yards located in the rear.
- House Lot (Figure 4.3.21): A lot designed to accommodate a single house with a detached garage. This lot also allows for small front and side yards.
- Civic Building Lot (Figure 4.3.22): This lot accommodates a building containing a civic or public use such as a community center, a daycare, or a church
- Open Space Lot (Figure 4.3.23): This lot is designed to accommodate the public. These lots contain greens, plazas, squares, parks, playgrounds, community gardens, stormwater management areas, or natural areas designated for preservation.

Rowhouse (RH)



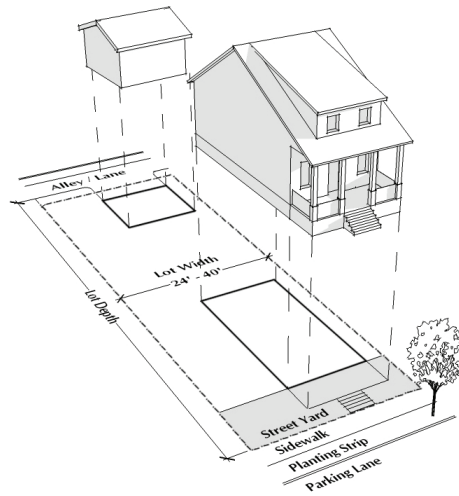
Character Examples:



Figure 4.3.20: Rowhouse Lot

Images from Sarasota County, Florida Form-Based Code, 2007

House (H)



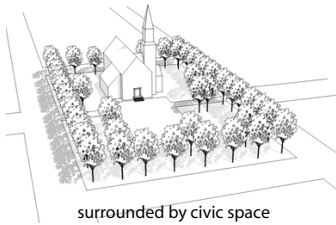
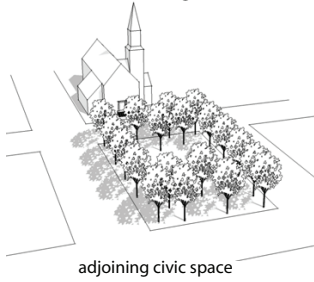
Character Examples:



Figure 4.3.21: House Lot

Images from Sarasota County, Florida Form-Based Code, 2007

Civic Building Lot (CB)



Character Example:



Figure 4.3.22: Civic Building Lot

Images from Sarasota County, Florida Form-Based Code, 2007

Character Examples:



Figure 4.3.23: Open Space Lot

Images from Sarasota County, Florida Form-Based Code, 2007

								Yards				Structures		
								street (min to max)				Height (min/max in stories; max in ft)		
				Lot Type	Lot Area (min/ max)	Lot Width (min/ max ft)	Frontage Percentage (min/ max)	Lot Coverage by All Buildings (max)	T5	T4 and T3	Side (min)	Rear (min)	T5	T4 and T3
				Pedestal Building	no min/ no max	no min/600	90%/100%	100%	0 to 10	not permitted	0	0	2/10; 110'	not permitted
				Lined Building	no min/no max	no min/600	90%/100%	100%	0 to 10	not permitted	0	0	2/5; 65'	not permitted
				Mixed-Use Building	no min/no max	no min/300	90%/100%	100%	0 to 10	5 to 10	0	0	2/5; 65'	2/4; 55'
				Apartment Building	4,000/no max	40/300	80%/100%	100%	0 to 10	5 to 10	0	0	2/4; 55'	2/3; 45'
				Courtyard Building	10,000/no max	125/300	50%/90%	80%	0 to 10	5 to 10	0	0	2/4; 55'	2/3; 45'
				Rowhouse	1,200/3,500	16/32	90%/100%	80%	not permitted	0 to 10	0	15	2/3; 45'	2/3; 45'
				House	2,400/4,800	24/40	70%/90%	60%	not permitted	5 to 25	3	10	not permitted	1/2; 35'
				Civic Building	no min/no max	no min/no max	no min/no max	100%	no min/no max	no min/no max	0	10	1/4; 55'	1/4; 55'
			Civic Space	no min/no max	no min/no max	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
T5	T4	T3	T1	Table 4.3.5: Lot Size and Dimensional Requirements by Transect Zone										
Transect Zone				Adapted by K. Burnham from Sarasota County, Florida Form-Based Code										

Table 4.3.5: Lot Size and Dimensional Requirements by Transect Zone

Adapted by K. Burnham from Sarasota County, Florida Form-Based Code

Lot types are placed according to their transect zone. Building types are arranged and placed as shown in Table 4.3.5. Building lots types are flexible and can be amended to suit specific needs and uses.

Buildings of compatible scale are placed on both sides of the street, and contrasting building types are typically placed back to back. Transitions between zones generally occur along rear alleys or lanes or along the T1-Preservation zone.



chapter 5: conclusions

CONCLUSIONS ON SUSTAINABLE URBANISM THROUGH SERVICE

This master's project focuses on achieving service in Littleton, Colorado. Because the design is focused on achieving service within the community, not strictly on the placement of buildings within an urban framework, the result is a community that is able to support local business and mass transit through walkability, increased density, and outside connection.

Sustainable Urbanist principles are used to achieve service in northeast Littleton. The principles of Sustainable Urbanism reconnect people to their neighborhood and community; however, it is not a one-size-fits-all approach that works in all locations. Northeast Littleton is an area completely surrounded by urban development. The Littleton Housing Authority will make sure that gentrification will not make the area unaffordable. Policies such as Economic Gardening promote local business. Sustainable Urbanism achieves service in northeast Littleton because of its unique location and existing policies.

The design of the site attains service. A centrally located town center within a reasonable walking

distance of residences decreases auto dependency among residents and increases pedestrian activity across the site. Residences are oriented toward the street, with automobile access located at the rear via alleys, providing multiple opportunities for service amongst the people. Bioswales and detention strips along streets provide comfort for pedestrians while decreasing stormwater runoff, servicing the Big Dry Creek. Integrating the trail system increases outdoor recreational opportunities. The five types of service are addressed and accomplished throughout the design of the site.

Increased density and integrated land uses through the utilization of form-based coding not only unifies the site, but gives multiple opportunities for service. A unified site is more attractive to potential residents and businesses. The form-based coding helps to achieve all types of service within the community by regulating the use and location of what can and cannot be built. Commercial areas and transit are serviced by the residences which are within reasonable walking distance. Greater density and

allowable multiple land uses through form-based codes equals a more sustainable neighborhood; one that services the needs of its residents.

Creating service within a community is a challenge. It takes cooperation and collaboration between all stakeholders, and cannot happen without proper planning and policy change. Planning of service needs to involve the entire community. Creating opportunities for service happen during the design and planning of a place, and need to be at the forefront during that process. Policies which support the needs of people and the environment are important to consider because they regulate development and promote service.

The focus of creating a service based neighborhood is meeting needs of a community. It cannot occur by accident. Achieving service is deliberate. Stakeholders need to create their own vision for their community through a public process before service can truly be achieved. Service only can happen if everyone's needs are addressed.



chapter 6:

appendices

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APPENDIX B

GLOSSARY

Adaptive Reuse: The creation of an alternative use for an existing structure to allow the building to be brought back to productive consumption, e.g., the conversion of an obsolete school to elderly housing. (Soule 2007, 447)

Affordable Housing: The general term referring to housing that can be accessed by families below the median family income of the area. (Soule 2007, 448)

Arterial Street: A major thoroughfare in a community providing vehicles access to commercial centers. (Soule 2007, 449)

Blight: Physical and economic conditions within an area that cause a reduction or lack of proper utilization of that area. A blighted area is one that has deteriorated or has been arrested in its development by physical, economic, or social forces. (Farr 2008, 297)

Community Development Block Grant Program (CDBG): A federally funded block grant that provides funds to eligible metropolitan cities and urban counties on an annual basis. (NAHB 1999, 23)

Charter for New Urbanism: New Urbanist principles to guide public policy, development practice, urban planning, and design. (The Congress for the New Urbanism 2000)

Cluster Development: A development design technique that concentrates building on a portion of the site to allow the remaining land to be used for open space, recreation, or preservation of environmentally sensitive land areas. (Soule 2007, 452)

Collector Road: Lesser roadways in a community which feed local traffic onto roads that provide throughput and connection to other major centers of activity. (Soule 2007, 45)

Comprehensive Plan: A comprehensive long-range plan that is designed to guide growth, development, and resource protection in a given local or regional district. (Soule 2007, 466)

The Congress for the New Urbanism (CNU): The organization promoting walkable, neighborhood-based development as an alternative to sprawl. CNU takes a proactive, multi-disciplinary approach to restoring communities. (The Congress for the New Urbanism 2000)

Corner Store: Small retail establishment (3,000 square feet maximum) located in a residential area. It may include a single residential unit. (Farr 2008, 297)

Downzoning: The change in zoning classification to less intensive use and/or development. (Farr 2008, 298)

First Tier Suburb: The earliest suburbs of an urban-core style city. (Hall and Porterfield 2001, 286) A municipality that sprang up around a central city and is now experiencing both the advantages and disadvantages of urban growth and decline. (Soule 2007, 459)

Form-Based Code: A method of regulating development to achieve a specific urban form. Form-based codes create a predictable public realm primarily by controlling physical form, with a lesser focus on land use, through city or county regulations. (www.formbasedcodes.org, accessed Dec. 1, 2008)

Gentrification: Literally meaning that the “gentry” reoccupy an area. The term applies to older residential areas which are discovered by bargain-hunting property owners who improve the units and the area, making it attractive and more valuable, but, as a consequence, price out the lower-income residents who can no longer afford to live in the area. (Soule 2007, 460)

HOME Investment Partnership Program: A federally funded block grant program that provides funds to states and localities on an annual basis for the purpose of benefiting low- and moderate-income families, prevent or eliminate slums or blight, and meet other urgent community development needs. (NAHB 1999, 22)

Hope VI Program: The federal program designed to revitalize severely distressed public housing. (NAHB 1999, 22)

Housing Finance Agency: public agencies with authority to finance, develop, and preserve affordable housing for low- and moderate-income households (NAHB 1999, 29)

Infill Development: New construction on vacant, unused, or underutilized land parcels located in built up areas. (Real Estate Research Corporation 1982, 2)

Land Use: The manner in which a parcel of land is used or occupied (Farr 2008, 298)

Light Rail Transit: Trolleys and subway, operating on fixed rails but not at the same gauges as regular rail facilities. (Soule 2007, 465)

Low Income Housing: Residential units built for families which meet threshold income levels. This may include rental or ownership options

with subsidies to the building or through a voucher to the tenant. (Soule 2007, 466)

Low Income Housing Tax Credit Program (LIHTC): a program created by the Tax Reform Act of 1986 administered by both the Treasury Department and state housing finance agencies. The objective of the program is to provide investor equity capital to reduce debt service on multifamily rental housing and thereby lower rents to low-income households (NAHB 1999, 30)

Market Rate Housing: Residential units that are intended for sale or lease based on the current market without subsidies or income restrictions. (Soule 2007, 466)

Mixed Income Housing: Housing developments that include both subsidized and market-rate units. (Suchman 2002, 59)

Mixed-Use Development: The development of more than one land use on a single site or within a building (such as residential, retail, offices, and recreation). These land uses co-exist within walking distance. (Sucher 1995, 18)

Multifamily: A building that is designed to house more than one family. Examples are fourplexes, condominiums, and apartment houses. (Farr 2008, 299)

Neotraditional Development: A new development built to emulate a traditional neighborhood, where a mix of different types of residential and commercial developments for a tightly knit unit. (Farr 2008, 299)

Neotraditionalism: Referring to a movement in current community planning philosophy which harkens back to earlier day of city development where missed uses were the norm. (Soule 2007, 468)

New Urbanism: Neighborhood design trend used to promote community and livability. Characteristics include narrow streets, wide sidewalks, porches, and homes located closer together than typical suburban designs. (Farr 2008, 299)

Owner Occupied Housing: Residential units that are lived in by the property owner rather than rented or leased out to a tenant. (Soule 2007, 470)

Pedestrian Scaled: development designed so a person can comfortably walk from one location to another, providing visually interesting and useful details such as public clocks, benches, art, drinking fountains, textured pavement, shade, interesting light poles, trash bins, transit system maps, covered transit stops, and street level retail with storefront windows. (Farr 2008, 299)

APPENDIX B

Plan (Comprehensive Plan or Comp Plan): A statement of policies including text and diagrams, setting forth objectives, principles, standards, and proposals for the future physical development of a city or county. (Farr 2008, 299)

Planned Unit Development (PUD): A zoning category that allows a mix of land uses, often at a greater density that would be allowed under any other zoning category. (Hall and Porterfield 2001, 287)

Public Housing: Residential units built, managed, and /or financed by governments or public agencies, usually for the benefit of low-income families. (Soule 2007, 472)

Public Transportation: Also referred to as mass transportation, it includes fixed-route bus service and light rail service as well as other forms of transit. (Soule 2007, 473)

Rapid Transit: Transit using a fixed route for passage between two or more points. This includes bus and light rail service. (Soule 2007, 473)

Redevelopment: The active removal of existing buildings and structure on a property to allow a new, higher, and better use. (Soule 2007, 474)

Regional Planning Agency: A public (or occasionally private or nonprofit) agency established to create plans and program at a level between state and local governments. Most agencies are advisory in nature and draw their policy officials from constituent local governments. (Soule 2007, 474)

Rental Housing: Residential structures designed for lease to tenants rather than purchase and ownership by occupants. The number of units available for rent varies substantially from one to large multifamily complexes. (Soule 2007, 474)

Rezone: to change the zoning classification of particular lots or parcels of land. (Farr 2008, 299)

Row Housing: A residential construction that allows for zero lot-line units built side by side for an entire block, allowing for affordable rental and purchase of small units. (Soule 2007, 475)

Smart Growth: Environmentally-sensitive land development with the goal of minimizing dependence on the automobile, reducing air pollution, and making infrastructure investments more efficient. (Soule 2006, 3)

Sprawl: Patterns of urban growth that include large acreage of low-density residential development,

rigid separation between residential and commercial uses, leapfrog development in rural areas away from urban centers, minimal support for non-motorized transportation methods, and a lack of integrated transportation and land use planning. (Farr 2008, 299)

Suburb: a town or small city located near and dependent on a larger city. (Hall and Porterfield 2001, 2)

Tax Increment Financing (TIF): A mechanism to allow a city or county to create a benefit district and “capture” the increase in net tax capacity that results when new development occurs within that district. Increases in tax revenue are returned directly to the TIF district and the revenue is used to pay for certain approved development costs, such as acquiring land or buildings, demolishing substandard buildings, installing utilities or road improvements or building low or moderate-income housing (NAHB 1999, 61)

Traditional Neighborhood Corridor: The combination of an activity center and transportation connections linking it to the rest of the city. These links may be made by frequent public transit service, walking, cycling, or car. The major thoroughway into a traditional neighborhood corridor should be wide enough to accommodate all modes of transportation and

on-street parking, and provide space for safe and inviting sidewalks for pedestrians. A traditional neighborhood corridor is characterized by a mixture of various uses and densities such as stores, office, and different types of housing. (Farr 2008, 300)

Traditional Neighborhood Development (or Design or TND): The basic unit of the New Urbanism containing a center that includes a public space and commercial enterprises, an identifiable edge, ideally a five-minute walk from the center, a mix of activities and variety of housing types. A TND is usually a grid pattern with high priority on public space with prominently located civic buildings and open space that includes parks, plazas, and squares. (Farr 2008, 300)

Transit Oriented Development (TOD): A form of development that emphasizes alternative forms of transportation other than the automobile, such as walking, cycling, and mass transit. TODs locate retail and office space around a transit stop. This activity center is located adjacent to a residential area with a variety of housing option, such as apartments, townhouses, duplexes, and single-family houses. It is similar to a TND. (Farr 2008, 300)

Zero-Lot-Line Development: A development option in which side

yard restrictions are reduced and the building abuts a side lot line. Overall unit densities are therefore increased. (Farr 2008, 300)

Zoning (Euclidean Zoning): The classification of land in a community into different areas and districts. Zoning is a legislative process that regulates building dimension, density, design, placement, and use within each district. (Farr 2008, 300)

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